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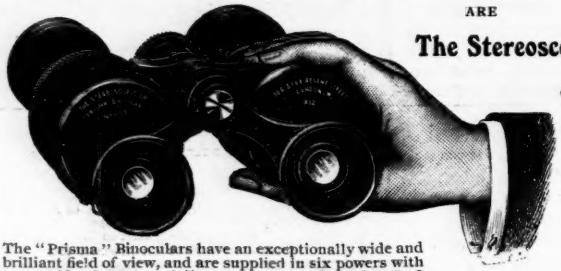
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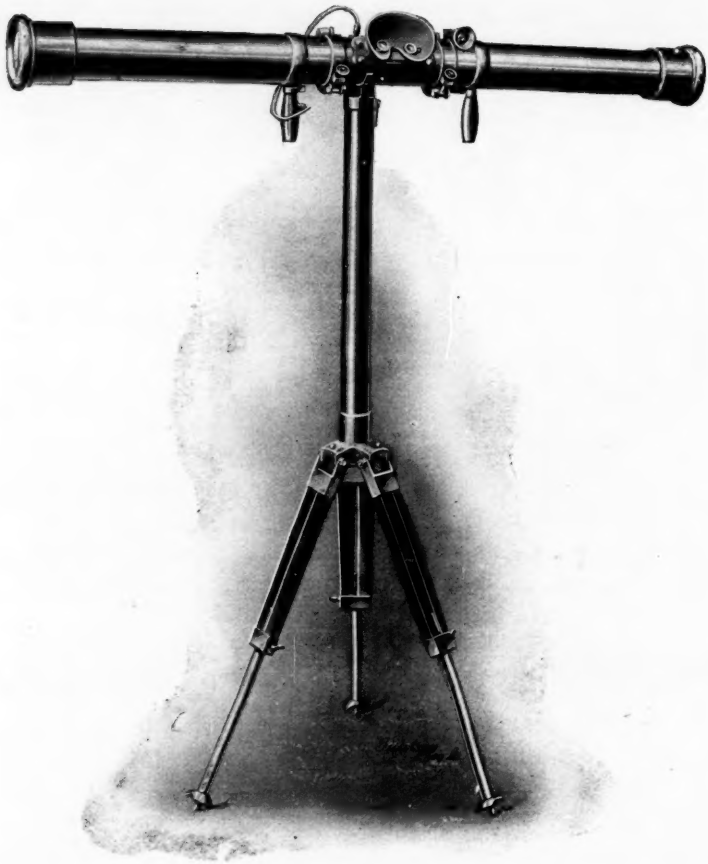
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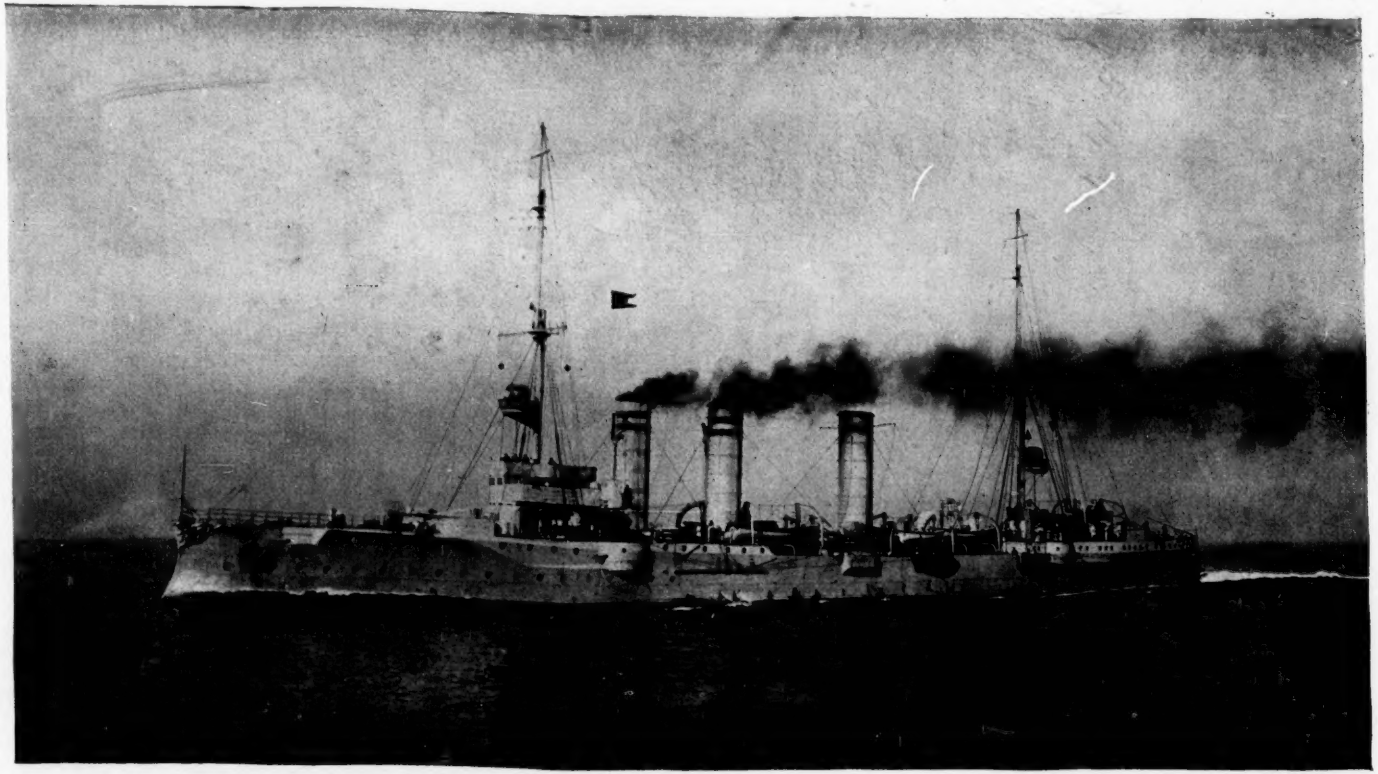
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THE JOURNAL

OF THE

ROYAL UNITED SERVICE INSTITUTION.

VOL. LIII. NOVEMBER, 1909. No. 381.

[*Authors alone are responsible for the contents of their respective Papers.*]

SECRETARY'S NOTES.

I. OFFICERS JOINED.

Major C. E. Pollock, R.A.M.C.
Major D. M. Robertson-Macdonald, Inns of Court Officers' Training Corps.
Captain F. S. Keen, Indian Army.
Captain J. G. Cadell, Indian Army.
Captain M. H. E. Welch, Royal Irish Regiment.
Lieutenant L. M. Bird, Royal Berkshire Regiment.
Lieutenant V. F. Price, Royal Indian Marine.
Second-Lieutenant C. J. Low, 14th Bn. London Regiment.
Major F. J. Heyworth, D.S.O., Scots Guards.
Captain C. B. Oldfield, 6th Bn. Middlesex Regiment.
Captain A. T. Paley, Rifle Brigade.
Captain R. F. Uniacke, Royal Inniskilling Fusiliers.
Second-Lieutenant D. C. Bolton, Manchester Regiment.
Lieutenant A. M. Winser, R.N.
Lieutenant Hon. R. A. R. Plunkett, R.N.
Captain G. F. Muller, R.M.L.I.
Captain H. R. Brancker, R.G.A.
Lieut.-Colonel J. W. Gifford, 5th Bn. Somersetshire Light Infantry.
Second-Lieutenant S. Wright, 21st Bn. London Regiment.
Sub-Lieutenant G. H. Heath, R.N.
Second-Lieutenant Hon. L. H. Tennyson, Coldstream Guards.
Captain E. W. Costello, V.C., Indian Army.
Captain G. H. F. Tailyour, R.H.A.
Second-Lieutenant R. D. White, Hampshire Yeomanry.
Captain S. R. Drury-Lowe, R.N.
Second-Lieutenant C. J. Balfour, Scots Guards.
Lieutenant D. MacLeod, North Staffordshire Regiment.
Captain H. C. L. Cock, R.G.A.
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Second-Lieutenant B. A. J. Havelock, North Staffordshire Regiment.
Captain C. E. Pym, 5th Lancers.
Lieut.-Colonel A. E. Hatch, Indian Army.
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Lieutenant B. F. Trench, R.M.L.I.
Captain A. C. Jeffcoat, D.S.O., Royal Fusiliers.
Engineer-Commander W. K. Williams, R.N.

II. ROYAL MONMOUTHSHIRE MILITIA HISTORY.

The Council have granted permission for the above work to be published, as a special case, by the Institution.

III. RUSSIAN GOLD MEDAL.

The Council desire to place on record that at "The Exhibition of Latest Inventions," held at St. Petersburg during 1909, under the auspices of H.I.H. The Tsarevitch Alexis Nicolœvitch, where the various Naval and Military Journals of different countries formed one section of the Exhibition, the Judges, recognising the great usefulness which the JOURNAL OF THE R.U.S.I. renders in the cause of naval progress, unanimously awarded it the Great Gold Medal. The Council of the Institution regards the awarding of the Medal in question as a personal honour conferred on the Editor.

IV. LETTERS.

Members having letters addressed to them to the Institution must understand that the Council accept no responsibility in connection with their safety and proper delivery.

V. ADDITIONS TO THE MUSEUM.

6031. A Relic of the Mutiny at the Nore, being an instruction forbidding all officers of the fleet to go on shore, by order of the Committee of the Mutineers. Dated H.M.S. Swan, 1st June, 1797.—*Given by J. W. Marshall, Esq.*

6032. Helmet Plate of the 1st and 2nd Battalions The Cameronians. Helmet Plate of the 2nd and 3rd Battalions The Cameronians, worn from 1881 to 1895.. Cap Badge of The Cameronians, worn from 1881 to 1895.—*Given by Captain H. D. W. Lloyd.*

6035. Sword presented by the inhabitants of the island to Colonel J. Macphail on his leaving the Government of Cerigo, Ionian Islands, in 1830.—*Deposited by J. E. St. M. Macphail, Esq.*

6036. Shoulder-belt Plate of the St. Martin's-in-the-Fields Infantry Association, formed in May, 1798, and commanded by Major A. B. Drummond.—*Given by Lieut.-Colonel A. Leetham.*

6037. Officer's Belt Buckle of "The King's" (Liverpool Regiment), worn from 1881 to 1904.—*Given by Lieut.-Colonel E. Montagu.*

6038. A pair of Mule Trunks formerly the property of Brigadier-General John Nicholson, and used by him during the Indian Mutiny, 1857.—*Given by F. Stewart, Esq., of Simla, India.*

VI. CHANGES OF ADDRESS.

Members are requested to notify each change of address by separate letter, which should be received not later than the 10th of each month, and only one alteration can be registered during any one month.

THE ADVANTAGES, STRATEGICAL AND COMMERCIAL, OF A BATTLESHIP AND OCEAN-GOING STEAMER CANAL BETWEEN THE FORTH AND THE CLYDE.

By Vice-Admiral Sir C. CAMPBELL, K.C.M.G., C.B., D.S.O.

WITH TWO MAPS AND BIRD'S-EYE VIEW.

On Wednesday, 7th July, 1909.

His Grace The DUKE OF ARGYLL, K.T., G.C.M.G., G.C.V.O., in the Chair.

The CHAIRMAN (The Duke of Argyll):—I have to apologise for being in this position to-day. The Duke of Sutherland, who was to have been the Chairman of this meeting, has been called away rather suddenly to New York, and he wrote to me from the ship in which he is sailing asking me to take his place at this meeting. I am sorry to say I shall have to leave before the end of the Paper, but there is a most efficient Chairman to take my place. As you are aware, it is only lately that the question of making a canal from the Clyde to the Firth of Forth has come much before the public. It is, however, a very old story, and one that was solved, as far as small tonnage traffic is concerned, by the Canal which at present exists. But it is manifestly advisable to have a canal of greater size than that; and in the meantime these meetings are being held, as Mr. Gladstone said before he introduced his Home Rule Bill, that "an examination and enquiry" may be made, in order that public attention may be directed to this matter, and that all information possible may be collected in regard to it; so that what seems at all events at first sight to be a thing which it is manifestly advisable to do, may not be lightly taken in hand, and also, with regard to figures, that people may not be frightened by the magnitude of the enterprise, and think it is "a bigger wall to jump" than it really is. I think Sir Charles Campbell's paper will show that very considerable progress has been made in regard to these enquiries, and will also indicate to you that a very considerable body, both of naval and military opinion, is in favour of the scheme. The chief difficulty, of course, is with regard to the size of warships now being built—a size which may be exceeded in every future decade. But we need not make up our minds at once that every battleship is to be a Leviathan requiring an enormous canal for its accommodation. The chances are more likely that a large class of very useful warships will be of smaller dimensions. The opinion is growing amongst naval men, of whom Sir Charles is a distinguished representative, that it is a matter of importance to have, so to speak, a back door to the defences of the Clyde and of the Firth of Forth, and that we should be able to get warships of a reasonable tonnage through quickly from the West to the East, and *vice-versâ*. It is also apparent that in the proposed canal only two locks are necessary for the purpose, one lock at Arrochar and one lock at Grangemouth. Formerly the objection was that the delay in passing through the locks on the canal

would be so great that it would not be worth while to have the canal made at all, because a vessel could steam faster round the North of Scotland. We all know what Caithness storms are like sometimes; we all know that fogs get in the way of navigation, whereas a canal, if once made, would ensure the rapid and certain passage of fleets from the East to the West, or the West to the East, and give, as I say, a back door to the Forth fortifications and the Clyde. With regard to the military question, that again has to be debated. There is a certain body of opinion that it would involve the up-keep of a heavy force in order to guard this canal; in short, to prevent its being captured. It has always seemed a possible feat, if it were necessary to destroy a canal, to blow it up by a few tons of dynamite in a very short time, and as to the general defences requiring a special defence on the line of the canal, I think that must always be taken into account in connection with any war, for you could not, under any circumstances, allow a large force to land and separate England from Scotland, as would be the case were the military seizure of this central zone of the country to take place. I now call upon Admiral Sir Charles Campbell to read his paper.

LECTURE.

THE project for the construction of a deep waterway connecting the North Sea and the Atlantic Ocean has long been before the public. In 1790 a barge canal was opened between Grangemouth on the Forth and Bowling on the Clyde.

This canal has been continually a commercial success; but it is far from fulfilling the requirements of to-day, and has no strategical importance whatsoever.

There was a proposal to enlarge the Barge Canal, and one to construct a waterway, taking the same line of route. In either case there are two very serious objections:—

1. The summit level of 90 feet involving at least six locks—three up and three down—by which to lift and drop the largest battleships and ocean-going steamers.
2. The exit at Yoker on the north bank of the Clyde would necessitate deepening the river across the tide to at least 36 feet at low water beyond the tail of the bank, at a prohibitive original outlay, and a gigantic annual expenditure to keep this new channel from silting up.

These objections being insurmountable, I do not propose to take up your time with an investigation of minor details, but will confine myself to the route *viâ* Loch Lomond and Loch Long, which, after careful study and consultation, I am convinced is the only possible solution.

It has been surveyed by Messrs. D. & C. Stevenson, competent engineers, of George Street, Edinburgh, who have devoted years of careful study and hard work in order to put forward accurate estimates. The cost has been roughly estimated at £20,000,000 for 36-ft. depth, including the passage from Loch Lomond to Loch Long—and has only 21-ft. lift

at exit and one at the entrance—maintaining the level of Loch Lomond all through at low water.

Experience teaches that estimates are exceeded when we come to face construction, but in this case the work is all straightforward, and owing to recent improvements in the methods of excavation, the estimates prepared are more likely to prove under than over the mark.

Colonel F. N. Maude, late R.E., has patented a hydraulic system of excavation which promises to effect a revolution in the digging of canals. I will ask him to explain it to you at the conclusion of this paper.

It is inconceivable that anyone can doubt the enormous benefit such a waterway would be to the nation, both strategically and commercially.

First and foremost it would be an all-important factor in the maintenance of peace. It would become the key to the strategic position in the North Sea, "The danger zone for many years to come"—"The zone of possible invasion."

My first point is the overwhelming necessity for Great Britain to hold and keep the command of the North Sea, or so-called German Ocean.

All history teaches that the acme of strategy is mobility, and especially on the sea, where the celerity with which a preponderating force can be massed in a given latitude and longitude will decide the issue of the conflict, and in all human probability the fate of the contending nations.

Napoleon's dictum, "That the whole art of war is to mass a greater force than the enemy at a given spot," remains the alpha and omega of all strategy, both by sea and land. Therefore, it is vital to the national safety that we should create the safest, most certain, and most expeditious method of transporting our battleships and destroyers from the Atlantic to the North Sea, and *vice-versâ*.

Strategic Importance.

The strategic value of this national waterway cannot be exaggerated:—

1. As a means to move a force of battleships, cruisers or torpedo craft from one sea to the other for the purpose of concentration and attack.

2. As a means to remove wounded vessels from the "danger zone," so as to dock and repair them in the comparatively safe ports on the Clyde, the Mersey, and Barrow, and in Belfast, or in the canal itself. The augmentation of Rosyth to a first-class dockyard in its exposed North Sea position would be obviated, saving from forty to fifty millions—more than double the cost of the proposed canal.

It would only be necessary to have an emergency dock (shore or floating) for a ship in a sinking condition; all other wounded vessels could enter the canal and proceed in comparative safety to Stirling, Glasgow, Greenock, the Mersey, and Barrow, or

Belfast, or to the suggested dock at the Loch Lomond entrance, twenty-one miles from any possible gun fire; or floating dock or docks on Loch Lomond.

3. The strategic advantages are entirely national, and it is for this reason that the nation should construct the canal, or guarantee interest on the capital required. The commercial advantages would benefit the nation by increased facilities for trade, and should the undertaking prove remunerative, the nation could use the profit to construct battleships, cruisers and destroyers, reduce the national debt, or to relieve the tax-payer. Under these circumstances, what possible argument can be brought forward to gainsay the enormous strategical advantage this undertaking would be to these Islands, especially in maintaining the command of the North Sea?

Locks.

It is most important from the strategic point of view that the transfer of a fleet from one ocean to the other should be as rapid and safe as possible.

The usual delays are (*a*) the entrance and exit locks, and (*b*) the canal speed, and (*c*) want of water at intermediate climbing locks.

With regard to (*a*) it is a matter of deep regret that by the Loch Lomond route there must be a 21-ft. lift at each end to reach the level of Loch Lomond; but even this is better than the three or four very deep lifts and drops which are imperative for the high level route.

With a large fleet on the Loch Lomond level, the only drawback is the loss of time in entering the canal, for the time is only lost at one end.

With only one entrance lock it would be necessary at low tide to allow from twenty to thirty minutes for each ship, but by having two entrance and two exit battleship locks side by side, and a smaller lock for destroyers, barges, and other small craft, it would be possible to enter four or even, with practice, six ships an hour. They would work alternately, the water from the full lock helping to fill the empty one, the next ship going in while the ship preceding her was being raised. At high tide a few minutes would suffice, and at mean tide 10 to 15 minutes.

Speed.—By the Loch Lomond route the cutting will be hard, and the sides nearly perpendicular, and this will allow of a canal speed of at least 8 knots nearly the whole way, and on an emergency, such as the passing of a fleet in war, even greater speed.

Passing through Loch Lomond, all ships could go full speed at about twelve minutes interval.

The canal will be worked day and night, and in thick weather at possibly a reduced speed. One of the strong points of the Loch Lomond route is that there is no delay from tides or overcrowding.

Commercial Value.

National Commerce.

Home.—Again, who can doubt for one moment the commercial value of such a waterway to the intercoastal trade of England, Scotland and Ireland. Take any map of Great Britain and Ireland, and trace the route from any port on the East Coast to any port on the West Coast, and I venture to predict that you will immediately become saturated with certain conviction that the Forth and Clyde Canal is of vital importance to the development of national intercoastal commerce.

Foreign.—Having made this investigation, go further afield and study Phillip's commercial map of Northern Europe and the North Atlantic, and see for yourselves the commercial advantages of the Forth and Clyde route and passage *viâ* the North of Ireland, to Canada, Newfoundland, America, the Panama Canal, and Pacific, and, generally speaking, to all parts of the world.

Fogs, etc.—The well-established meteorological phenomenon (as evidenced by the coast guard statistics), that there are five days' fog by the North of Ireland Channel to fifty or sixty by the south route, would alone give all navigators and marine insurance companies a very strong preference for the canal route. Take the evidence of any experienced captain of the Navy, or Mercantile Marine, as to the difference it would make in his life and in the safety of the vessel under his command, if he could pass through mid-Scotland and out north of Ireland, instead of facing the fogs, tides, and crowded state of the English Channel, or the roundabout, uncanny, dangerous Pentland Firth.

A further study of the North Sea and Atlantic charts will convince you that in addition to safety there is in many cases a considerable saving in distance run, and Leith, Dundee, Aberdeen, Newcastle, Hull, and even London, would practically become on a par with western ports, and largely develop their western trade, whilst western ports would develop an eastern traffic.

I have no hesitation in predicting that this route would be generally used by all the nations on the shores of the North Sea, and that the Clyde end would become the departure station for ocean-going steamers bound for the Atlantic.

Commercial Advantages.

Until the canal is open, and probably for some time afterwards, it will be impossible to assert positively what will be the extent of the traffic to and from one coast to the other (intercoastal traffic). It is still more difficult to estimate with any certainty the through traffic, from the Baltic and North Sea ports to the West Coast, Ireland, America, and Canada.

We can only be certain that there is a large trade existing, and that it must be greatly increased by improving the facility

of access from one port to another. There is a universal law that merchandise of every description travels along the route which gives the greatest economy in time and money. I have no hesitation in predicting that very soon after the canal is open it will pay its expenses and a moderate interest on capital. I agree with the statement in the *Glasgow Daily Record* that "It can be shown that from the commercial point of view the canal would prove a tremendously valuable undertaking to the British Isles generally, but especially to the Clyde and Forth as shipping estuaries," and I may add to the commercial and labour prosperity of mid-Scotland especially, and to Great Britain as a whole.

In order to assist the estimate of possible traffic, opinions have been obtained from some of the ports which might hope for increased trade. They are as follows:—

NATIONAL SHIP CANAL.

Glasgow.—Councillor Ure, having with the consent of the Corporation altered the notice of motion given by him on the 3rd ultimo, read as follows: "That, looking to the large amount of unemployment prevailing at the present time, and to the de-desirability of the Government, as far as possible, providing suitable work, the Corporation memorialise the Government to reconsider the proposal to construct a ship canal between the Forth and the Clyde, which would be a means of providing useful and serviceable work for skilled and unskilled labour, and would secure a direct navigable channel between the North Sea and the Atlantic, and would be advantageous both for the State and for the commerce of the country," moved in terms thereof.—Bailie Roderick Scott seconded the motion.—Councillor Battersby, seconded by Councillor James McFarlane, moved the previous question as an amendment.—After discussion, a vote was taken by a show of hands, when twenty-nine members voted for the motion and eight for the amendment.—The motion was accordingly declared to be carried.

Stirling.—The Commissioners of Forth Navigation on public grounds are in favour of the Ship Canal, and consider the Canal would undoubtedly help trade.

Portree.—There is no doubt the Ship Canal would be of great benefit to the Western Islands.

Whitby.—Consider that the Ship Canal would help trade and that the Harbour Authority favour the construction of a Ship Canal from the East to the West Coast.

Irvine.—The Harbour Trustees consider that the Ship Canal would help trade, and are in favour of a Ship Canal being made. The traffic to the Baltic ports, Denmark, Germany, etc., is about 9,000 tons, and to Tay, Forth and Humber ports about 6,000 tons or 15,000, but if the proposed Canal were made a considerable traffic could be developed.

Port Glasgow.—The Harbour Trust are in favour of a Canal being made, as they believe it would help trade.

Greenock.—The Greenock Harbour Trustees are in favour of a Ship Canal by Loch Lomond being made, as it would greatly help the trade to this Port. Last year 31,029 tons arrived at Greenock from the Baltic Ports, Sweden, Denmark, etc. The Directors of the Chamber of Commerce, Greenock, passed the following resolution:—"The Directors of the Chamber of Commerce are strongly of opinion that the existence of the proposed National Ship Canal, between the Forth and the Clyde, *viâ* Loch Lomond, would be of great advantage to the Port of Greenock and District, and while quite recognising that adequate commercial traffic might not be forthcoming to make such a Canal pay, yet the outlay by the Government, in the Directors' opinion, would be fully justified as forming part of the scheme of National Defence, especially with reference to the passing of H. M. ships from Rosyth naval base to the shipbuilding yards on the Clyde, and also to H. M. Torpedo Works at present under construction at Greenock."

Sligo.—The Harbour Commissioners are in favour of a Canal being made. With the present traffic, 14 to 17 vessels would pass through per annum.

Chester.—The Dee Conservancy Board consider that there will be from 1,300 to 3,000 tons per annum with the present trade.

Blyth.—Vessels leaving Blyth during 1908 for North American and Canadian Ports, 11 vessels, with a net register tonnage of 22,317. Vessels leaving for Clyde and other Ports, 5 vessels; tonnage, 10,937.

Londonderry.—The Commissioners are in favour of a Ship Canal being made, as they are of opinion the Canal would help trade. 9,076 tons would use the Canal with existing trade.

Belfast.—A Ship Canal would probably prove useful in the interests of trade and commerce, and they are inclined to view the scheme favourably.

Lancaster and Glasson.—Harbour Board are in favour of Canal being made, as it would help trade by making Baltic Ports, etc., nearer to us. We have about 8 vessels in the season to European Ports which would use the Canal. We used to have 2 vessels every spring from Dundee, but on account of the long way round it all now comes by rail.

Hartlepool.—Port and Harbour Commissioners favour the construction of a Ship Canal between the Forth and the West Coast.

Douglas, Isle of Man.—The Harbour Commissioners are in favour of a Canal being made from west to east. The tonnage at present that would use the Canal is about 2,500 per annum.

Berwick.—The Commissioners are in favour of the scheme, and in their opinion it will help trade. The average annual number of vessels is 6 to Glasgow and 20 to Bowling.

Maryport.—The traffic from the Harbour to the Baltic Ports, Norway and Sweden is 15,910 tons per annum.

Larne.—We get about 9,000 to 10,000 tons of wood pulp from Norway, Sweden and Russia, and we ship about 600 tons of bauxite to Newcastle-on-Tyne and Goole per annum.

Port Ellen.—The Harbour Authority are in favour of a Ship Canal being made, as it would help trade. Traffic, 4,000 to 5,000 tons per annum to the Forth and Tyne Ports.

Whitehaven.—The Harbour Board are in favour of a Ship Canal being constructed between the West and East Coasts of Scotland, and that in their opinion the Canal would be in the interests of trade on this coast. The number of vessels to the Baltic and neighbouring countries during 1908 was:—*Arrivals,* 6 steamers, 2 sailing ships. *Sailings,* 37 steamers.

Ardrossan.—The Directors are generally in favour of such a Ship Canal being made. That such a Canal, in their opinion, would help trade.

Montrose.—The Montrose Harbour Trustees consider that Canal would help trade. 7,200 tons shipped for Wales, etc., per annum, and 43 vessels for Campbeltown, Islay, Liverpool, etc.

Dundee.—The Harbour Trust are in favour of a Ship Canal, and consider that it would help trade. A very large quantity of Dundee manufactures go to America and Canada, goods being railed to Glasgow, 8,000 to 10,000 tons sail to New York per annum. An extensive traffic is carried on between Dundee and Liverpool, Manchester and Belfast.

In the meantime Dundee is practically shut out of traffic by sea with Glasgow and West Coast ports in England.

Peterhead.—The Harbour Trustees are in favour of a Ship Canal being made, as it would be of great advantage to craft going to and returning from the West Coast. The Canal would be used to a large extent by steam drifters, and the Harbour Trustees consider that general trade would derive much benefit from the Canal. Tonnage of 3,819 tons sailed from this Port to Liverpool and other Western ports last year, which would use the Canal.

Ayr.—Traffic per annum to Ports on the Baltic, Norway, etc., of 20,740 tons.

Replies from British Vice-Consuls.

Copenhagen.—Canal would benefit lines which trade regularly with the Baltic, such as Stott & Co., Liverpool; Cooker & Co., Liverpool; United S.S., Copenhagen; by obviating the dangerous passage round North of Scotland, and encourage direct trade between the North German Baltic ports and the West Coast of Scotland and England, and also with Ireland.

Amsterdam.—There is a direct weekly service between Holland and America, and a fortnightly service between this port and Liverpool.

Kiel.—It is most likely that the Sea Canal will be of influence upon the trade with bulk cargoes from other Baltic

ports, although this will, of course, principally depend on the costs the passing through will incur for vessels, etc.

Hamburg.—It is believed that many vessels would use the Canal if dues are not prohibitive.

THE CONSUL GENERAL REPORTS FROM HAMBURG.

Arrivals from West Coast U.K. ports.	tons.
Liverpool	3,716
Manchester ..	39,718
Glasgow	955
Belfast	17,158
Dublin	1,719
Galway	378
Limerick	3,411
outward	67,055
and return	67,055
British ports ..	134,110

Foreign.	ships.	tons.
Canada ..	9	9,286
America ..	450	1,799,364
Total outd.		1,808,650
Total return		1,808,650
Total from this source alone		3,617,300
Grand total ..		3,751,410 tons per annum.

It may here be stated that, the dues will be regulated so as to obtain the greatest possible traffic. Several suggestions have been made, varying between 1s. 6d. and 6d. per ton, but this question must be left open till experience settles it. If the nation constructs the Canal or guarantees the interest on the capital required, the nation will decide what dues are best for the commercial prosperity of the realm and the profit of the undertaking. In the Barge Canal the dues vary from 7d. to 2s. 6d. per ton weight of goods carried—average for year, 1s. 7d. Traffic in 1908, over 100,000 tons.

CANAL NOT AN EXPENDITURE BUT AN INVESTMENT.

At first sight the cost of construction appears considerable, but when you reflect that the necessary funds expended form a sound investment, which, in addition to earning a reasonable dividend on the capital invested, will remain a strategic and commercial asset for all time, gradually increasing in value as new trade and traffic develops, the conviction is forced upon you that the possible temporary use of the national credit will be limited to four or five millions, and that will be repaid. Even if it were not, it would be a trifling sum to pay for such a permanent addition to the national defences.

When battleships, cruisers, etc., are built, we know that in the course of a decade they will have become obsolete and practically worthless! Not so with the construction of this national waterway. It must increase in value with age.

When the project of cutting through the Isthmus of Suez was mooted, owing to the pessimist cry that we should certainly lose India, our financiers held aloof, and Great Britain would not subscribe! It was only by good luck that the Khedive's shares came on the market and were snapped up by the Government of the day for four millions sterling. They are now worth thirty-two millions, and steadily advancing.

The nation is therefore to-day £28,000,000 richer, and consequently the National Debt reduced by that amount owing to the investment by the Government of the day of four millions sterling in the Suez Canal.

Another national investment of the same kind now presents itself for the consideration of the Government, which, in addition to its financial possibilities and its commercial and strategic value, will give healthy and remunerative employment to tens of thousands of the deserving unemployed for nine or ten years at an outlay of £2,000,000 per annum.

Such a phenomenal result as that of the Suez Canal cannot be predicted and can hardly be expected for the Forth and Clyde Canal; but there is not the slightest doubt that we may reasonably expect that the earnings, after paying 3 per cent., will pay the cost of construction long before the end of this century. The nation remaining in possession of this valuable commercial and strategical asset.

In the scheme suggested by the Forth and Clyde Canal National Association, as an alternative to national construction, all that is necessary for the immediate commencement of the work is that a Bill should be passed through Parliament with the necessary clauses for acquiring the land, and a guarantee of the interest at 3 per cent. on the necessary capital as it is called up during construction.

In return for this guarantee and advance the nation would acquire the following rights, and arrangements would be made by which the Government advance would be repaid:—

After the Canal is Open.

1. Free passage to and fro for all Government ships and cargoes.
2. Complete control in time of war.
3. Sinking fund of all profit after 3 per cent. has been paid, until advance has been redeemed!
4. After redemption, the Government still to retain a proportion of the profit for naval construction or for such other purposes as they may approve—reduction of the National Debt, etc.
5. Then all profit over 3 per cent. to go to reduce the capital outlay, if so desired by the proprietors.

THE NAVY AND THE FORTH AND CLYDE CANAL.

It has been thought by some individuals, and especially by some of my brother officers, that the Navy Estimates might in some way be burdened with this national investment.

Under no circumstances or an any account whatsoever should the Navy have any connection with the financial arrangements for the construction of the Forth and Clyde Ship Canal, or for any funds invested during its construction, except possibly to arrange the loan.

All annual funds voted for our naval protection are urgently required for their legitimate purpose, viz., shipbuilding, upkeep, *personnel*, etc.

No other country has charged, or would think of charging, the naval vote with the construction of a national waterway. The Navy Department is the last on whom any contribution to this national investment should fall.

The precedent of Gibraltar harbour and docks would meet the case.

National Profit from Rise in Value of Land.

In addition to the saving on the construction of Rosyth, by the Loch Lomond route we have the increase in the value of the adjacent land to consider as a national asset.

At present, with few exceptions, it is ordinary grazing land, but it may be safely predicted that by the time the Canal is open, the facilities for transport on a great inter-coastal and inter-oceanic highway would cause a rise in building value. Towns and villages, manufactories, coaling stations, warehouses, are bound to spring into being along its banks, and it may be fairly estimated that the land in its immediate vicinity will reach at least ten times its present value before the opening day.

This rise in value alone will pay a considerable portion of the cost of construction.

This increment does not apply to the high-level route, as the land is already at manufacturing value.

The present landowners should share in this profit, in addition to the certain increase in the value of their remaining adjacent property.

In addition to the strategical and commercial advantages already enumerated, the nation would obtain a fair, if not a large, return for the funds expended, and with a sinking fund of all profit over 3 per cent., there is every probability that the loan would be paid off by the end of the first half of this century.

Our great commercial rivals have stolen a march on us from national funds! Woe be to our great Empire if we hesitate to take a leaf out of their book and follow their example. The strategic advantages of the Kiel Canal are trivial compared with the Forth and Clyde Canal as an alternative strategic route to the English Channel.

Should the British Government refuse to make the Canal with national funds by a temporary loan? It is the duty of the Government to assist the carrying out of the scheme by private enterprise by guaranteeing 3 per cent. on the capital expended. £2,000,000 per annum for nine years or £4,000,000 per annum for four and a half years is approximately the sum required, and allow £2,000,000 for interest and contingencies during construction. With such a guarantee, a company can be formed and the work commenced at once. Without such guarantee it is impossible.

A Glance at what Other Nations are Doing.

France. — Internal system of waterways, costing £120,000,000, independent of the proposed Havre-Paris-Marseilles Canal and the Bordeaux-Narbonne Canal, which may be delayed, but which will be carried through ultimately.

Germany has spent and is spending some £20,000,000 on making and deepening the Kaiser Wilhelm Canal to take the largest battleships. She is also linking up other canals. In 1905 nearly seventeen million sterling was sanctioned for a waterway from the Rhine to the Weser, with branches and a connection between the Oder and the Vistula; and it is proposed to connect the Danube and Rhine at a cost of seven million sterling. Plans have just been sanctioned for a canal from Kiel to the Elbe.

Austria is linking up the Danube, Oder, Moldau, Elbe, and the Werchsel rivers at an outlay of 31 million sterling.

Russia has ambitious projects from Lake Onega to the White Sea, and last year opened a ship canal 24 feet deep establishing free communication between the Black Sea and the Sea of Azoff.

Greece.—The Corinth Ship Canal, three millions.

Italy.—Project to connect the Adriatic with the Tyrrhenian Sea at a cost of 24 million sterling.

Sweden has connected the Baltic with the North Sea.

America is expending gigantic sums on the connection between the South Atlantic and Pacific, and at a cost of 100 millions sterling the creation of a vast system of international waterways, linking up the great lakes.

Canada is about to spend at least twenty millions on a project to connect Lake Huron and Montreal.

Other Canals.

Kiel.

It is always well when trying to forecast the amount of success that may be reasonably expected as the result of any great undertaking, to base our expectations on the result of some similar scheme already in operation. In this case, from the strategical point of view, we have the Kiel Canal, which has given the German fleet a safe and easy route into the North Sea, with which they are so satisfied that they are spending an additional eleven millions in deepening it to float the battleships now building and of the future. It was never considered to have great commercial prospects, and is dependent on through traffic, besides being seriously handicapped by the Skaw route. Notwithstanding, the tonnage for the year ending 31st May, 1897, was 1,848,458 tons, and the revenue was 1,016,854 marks, which in the corresponding year 1907 had increased to 5,963,125 tons and 2,945,550 marks. For the year 1908 there was an increase of traffic of 1,840 vessels and of 460,316 tons

register. The traffic round the Skaw is rapidly being diverted to the canal, and the same result will follow in the case of the Forth and Clyde Ship Canal.

Amsterdam.

No strategical importance. Revenue in 1902, 5,900,000 tons used the canal; in 1906 over 7,000,000.

In the above the geographical conditions and the volume of trade are so dissimilar to those of the Forth and Clyde that we shall have to look nearer home for an example upon which to base our calculations. The estimate of traffic and the beneficial results to the surrounding districts may be best arrived at by studying what has actually taken place in the case of the Forth and Clyde Barge Canal and the Manchester Ship Canal.

Existing Forth and Clyde Barge Canal.

The revenue has increased from £68,010 in 1906 to £77,968 in 1907, an increase of nearly £10,000 in a bad trade year.

The Manchester Ship Canal.

No route has the double advantage of strategy combined with commerce, which is such a prominent feature of the Mid-Scotland National Ship Canal; but for the commercial prospects we may expect to compare favourably with the result in the case of the Manchester Ship Canal in the traffic returns, and even more so in the rise in the value of property all along and in the vicinity of the line of route, and we must bear in mind that Manchester is a *cul-de-sac*, and not an oceanic and intercoastal highway from sea to sea.

Since the opening of the Canal the total tonnage in traffic and the total yearly revenue have been :—

Year.	*Tons.*	£
1894	925,659	97,901
1895	1,358,875	137,474
1896	1,826,237	182,330
1897	2,065,815	204,664
1898	2,595,585	236,225
1899	2,778,108	264,775
1900	3,060,516	290,830
1901	2,942,393	309,517
1902	3,418,059	358,491
1903	3,846,895	397,026
1904	3,917,578	418,043
1905	4,253,354	449,436
1906	4,700,924	498,937
1907	5,210,759	535,585
1908	4,582,496	506,975

Up to the present time the expenditure on capital account has been nearly £17,000,000.

A record such as that disclosed by these figures proclaims the success of the Canal. It could not be expected that the sanguine expectations of its brave promoters should be fully realised in the comparatively short period that has elapsed since the venture was consummated. But wonderful progress has been achieved. Mr. W. H. Hunter, who is now the chief engineer, declared, in a paper read at the International Engineering Congress in 1904, that "the operation of the Manchester Ship Canal has directly or indirectly affected beneficially the whole of the greatest industrial district on the face of the earth—a district of which the present population does not fall far short of 10,000,000 persons — while in the more limited area, of which the city of Manchester is the heart and centre, many industries have been saved from extinction, and many others from decline and ultimate decay."

Between the years 1880 and 1890 "it was only too apparent," said Mr. Hunter, "that in Manchester and its environment of manufacturing towns decadence was stamped upon almost every industry, and that all progress was arrested. One manufacturer after another moved his works to the sea-board, leaving disused factories, empty warehouses, and uninhabited dwellings. . . . . Now, not only has decline been arrested and decay averted, but lines of new and vigorous growth have shot, and are shooting, out on every side. North, south, east, and west, there is no exception—expansion is universal. Old industries have been revived, and new industries have been introduced. The change is definite and impressive, and has been due solely to the effect and influence of the Canal."

In the same paper Mr. Hunter quoted a very remarkable statement by Mr. C. W. Macara, President of the Federation of Master Cotton Spinners' Associations, and ex-President of the Manchester Cotton Association, that "the Canal has, in reduction of the cost of conveyance of raw cotton and of goods manufactured therefrom, been worth at least £500,000 to the cotton trade alone." There is no greater authority on the staple trade of Lancashire than Mr. Macara, and the conclusion at which he arrived is confirmed by Sir Frank Forbes Adam, formerly the President of the Manchester Chamber of Commerce.

I venture to predict even greater results for Glasgow, Greenock, Dumbarton, Leith, and, in a lesser degree, for all ports on the East and West Coast, but especially for Stirling, which would become a distributing centre on this great intercoastal and interoceanic highway.

To sum up from former papers and the opinions of other advocates of this desirable scheme, I contend that the Forth and Clyde Battleship Canal would combine in itself all the

elements essential to the production of national wealth, and its chief advantages may be briefly summed up as follows:—

1. It would add another sea channel, and extend the coast-line through one of the principal industrial centres.

2. It would unite, at the most suitable point, the two seas most frequented by national commerce.

3. It would avoid the loss of life and property inseparable from the north and south routes, and would reduce the strain on the hulls and machinery of vessels, the insurance premiums, the fuel bill, and the loss of time coaling, and induce larger passenger traffic owing to increased safety in travelling and shorter passage.

4. It would reduce by hundreds of miles the distance between all the great shipping ports on the east and west coasts.

5. It would provide extensive harbour accommodation on important trade routes.

6. It would be of inestimable service in the protection of the national trade in the event of war.

7. It would enable men-of-war, ocean-going steamers, and coasting vessels to coal and also oil fuel directly at the source of supply.

8. It would more than double the mobility of our fleet, giving us a power of concentration in the Atlantic or North Sea which would be *denied* to our opponents, and be of inestimable advantage to us in reference to the success of any operation we had taken in hand.

No. 6 alone is amply sufficient grounds for constructing the Canal from national funds. This route could be safeguarded with the maximum of security and the minimum of State expenditure in cruisers. It could be freely used when the Channel and South of Ireland route would be impossible; and for the importation and distribution of Canadian grain, lumber, and wood pulp it would be invaluable.

The Royal Commission will in due course make their final report.

The Prime Minister has stated in the House of Commons that the question will be considered after the report of the Royal Commission is received.

It would, therefore, seem opportune that those who clearly see our supremacy in the North Sea menaced by the growing sea power of our great commercial rival, should put their shoulder to the wheel and try all they can to prove to the

Government that not only our commercial prosperity but our salvation from defeat at sea and consequent invasion may depend upon the speedy construction of this all-important national, self-supporting waterway. There is not a moment to lose. Once let this opportunity slip, and it may be a very long time before we get such another.

I beseech the East Coast ports, the landowners and the towns on or near the route, the City of Glasgow, the Government, the Members of both Houses of Parliament, and the British people of all grades and denominations to take this vital project seriously in hand, and not to let the matter rest until the national construction or guarantee of interest on the capital required for the Mid Scotland Battleship and Ocean-going Steamer Canal has been decided upon.

(During the reading of the paper the Chair was vacated by the Duke of Argyll, and occupied for the remainder of the meeting by Lord Saltoun.)

Commander the Marquis of GRAHAM, C.V.O., R.N.V.R. (Commanding Clyde Division):—As my home is on the route of the proposed canal, and as I am acquainted with nearly every yard of it, I should like to say a few words on the subject of this paper. While I appreciate the trouble which the distinguished Admiral has taken in connection with this scheme and all the hard work he has put into it, I regret—and my regret is very sincere—that I shall have to adopt a critical attitude towards the scheme, if not absolutely to oppose. The Admiral has divided the scheme into two parts. He has dealt with it first of all from the strategical point of view, and then from a commercial point of view. I shall deal with it likewise strategically and commercially. From the strategical point of view of the use of this canal, it seems to me we must assume one of two things: either that on the outbreak of war the enemy's fleet will be in the North Sea and our fleet in the Atlantic; or else we are to assume that our fleet will be in the North Sea and the enemy's fleet in the Atlantic. It seems to me inconceivable that when our international relations become strained we should find our fleet on one side of Great Britain and the enemy's fleet on the other, and for this reason. Why should our fleet ever be in the Atlantic? Our fleets go to the Atlantic for short periods of manœuvres, but when they are there they are away from their coaling places, and their dockyards. The Atlantic, moreover, is of all places in the world the most impossible one for submarine boats and small torpedo craft to work. Therefore it is not really conceivable that on the outbreak of war our fleet will be found in the Atlantic. Again, if our fleet is in the Atlantic it is away from the coastline of any possible enemy. It is therefore away from what is called the frontier of England, for remember it has been laid down on the highest authority that the coastline of a foreign country is the frontier of England, and for that reason from the strategical point of view I do not consider this canal will be of importance. Secondly, I presume this canal is going to be defended, but I cannot see in the paper any provision for defence or the cost of defence. It will, I presume, not only have to be defended at both its entrances, but it will also have to be defended in some kind of manner along its entire route. A most distinguished authority on ordnance laid it down the other day that it would be possible for an aerial vessel in the future to carry a ton or two tons of high explosives. If that is the case, and an aerial vessel was to come

across the route of the canal and drop explosives down on any vital point of the canal, or on a ship in it, it would block the waterway and render it useless. I consider the cost of defence, therefore, must be provided for and added to the cost of the canal. Then, again, I see the gallant Admiral states that at one part of the canal there would be repairing basins out of range of gun fire—in Loch Lomond and round about Stirling, but the cost of those repairing basins has not been mentioned. If you are not going to include the defence of the canal or repairing basins, you lose half the advantage of the canal, if it ever had any advantage. Now let us look at it from a commercial point of view. We have been told the cost is to be £20,000,000. A little later on, at the end of the paper, we are informed that the Government will be expected to guarantee a large sum of money, about £4,000,000 per annum for four years—that is £16,000,000; in other words, £36,000,000 has to be found to carry out this canal. Then the rate of interest is taken at 3 per cent., which, from a commercial point of view, is too low. It is lower than the rate of interest on any portion of the Manchester Canal Stock. The Admiral's comparison, again, of the value of other canals was rather unfortunate. He mentioned one in France, on which they are going to spend a prodigious sum of money. That canal is not completed, and therefore the evidence adduced is of no use with regard to the success of this one. Then the gallant Admiral quoted the Corinth Ship Canal in Greece—this canal was put up for sale on the market recently as a bad concern. With regard to the Panama Canal, the circumstances connected with it are wholly different from those connected with this canal. To circumnavigate Cape Horn and Southern America is very different from circumnavigating the North of Scotland, and places the comparison between those two canals out of court altogether. The mentioning of the Manchester Ship Canal was very unfortunate indeed. We are told in the paper that £17,000,000 of capital has been spent upon it; as a matter of fact the capital of that canal is quoted as being 10¼ millions. If, therefore, the Admiral is correct in saying they have spent 17 millions, they have spent 6¾ more millions than the amount of the original estimated capital expenditure. Although we were given figures showing the increasing annual value of the total canal returns, you must remember that those increasing returns have only just been sufficient to pay debenture interest, and that for more than ten years they have not paid a single dividend. Sir Charles Campbell was again very unfortunate in the commercial centres he quoted in favour of this canal. He has given us a list of towns which support the scheme. Among them he has quoted Portree. If that is Portree in the Isle of Skye it has only 800 inhabitants—it is a mere village. Again, he quoted Port Ellen. If that is the Port Ellen in the Island of Islay that also only has about 800 inhabitants. It is surely absurd to quote two villages as commercial centres of any significance in favour of this canal. I observe also that Greenock is quoted as supporting the scheme; but if you look at Greenock's reply you will find it is very qualified; it even doubts the commercial soundness of the canal. It says it approves of this canal as forming a part of the scheme of national defence, especially with reference to the passing of H.M. ships from Rosyth Naval Base to the shipbuilding yards on the Clyde and also H.M. Torpedo Works at present under construction at Greenock. I know the torpedo factory was put at Greenock because it was close to the range at Loch Long. Loch Long was selected as a torpedo range because of its absolute clearness of shipping; but if you go and make this canal and make Loch Long full of shipping, it will do away with the torpedo range,

and that will do away with the torpedo factory. I think I know quite enough of the Greenock Harbour Trustees to say that, had they been told that, they would never have supported the scheme. As to the suggestion of carrying out the scheme for the sake of the unemployed, we all know there is no labour in this country so unremunerative as unemployed labour. We all know that in Glasgow the work given to the unemployed is, at Palace Rigg, a scandal, and a waste of public money. In London we have spent thousands of pounds on unemployed labour, and only recently the Council valuer valued the work done in the public parks by the unemployed during the past winter at £7,000, whereas the public expenditure upon it was £59,000, that is eight times the value of the work done. Yet we are recommended to push this scheme for the sake of giving employment to thousands of unemployed at a cost of £2,000,000 a year! With regard to the increase in the value of the land along the route of the canal, this I consider to be an appeal to win over the support of the landlords in the district. There never was a more unfortunate moment to seek to gain the approval of the landlords on the question of the possible increment in land values. We know well enough that if the land was to increase in value because of the advent of the canal it would be unearned increment, and I should like to know how many landlords on that route can look forward to unearned increment at the present political juncture. There is only one more point to which I wish to allude, and that deals with the question of sentiment. You must remember that this canal would go through the most historical part of Scotland. Loch Lomond and the Stirling district are localities to which thousands of people come every year from all over the world for the purpose of seeing the many historical places; but if we are going to have a canal, with German liners puffing smoke at every point and whistling at the various bends and bridges, that must do away with all the beauties and historical associations of the district. I venture to say that not only would the district be ruined by the ugly sight of this canal, but the whole of Scotland would be the poorer; and I am therefore sorry I am unable to support the Lecturer.

Mr. A. R. Rainy, M.P.:—I listened with a good deal of attention to the speech which we have just heard. It occurred to me, however, that there was a search for reasons against this scheme rather than a judicial consideration of the whole proposition. I may be mistaken, but it did appear to me that this was a violent attack, for reasons not mentioned, upon a particular scheme which has been laid before the country for consideration, and, therefore, if the Marquis of Graham will excuse me, I think his speech was scarcely judicial. Now let us just examine one or two of the things that were said. His lordship began by telling us that it was no advantage to have an outlet to the Atlantic because our fleets ought never to be there. That is the most extraordinary assumption I ever heard anybody make. I do not pretend to be a naval expert, but I think that I shall carry you with me, and possibly naval experts, when I say that the mobility of the fleet from one part of the sea to another is a most important factor. Therefore, simply to say your fleet ought not to be in the Atlantic is surely a proposition which cannot at once command universal consent. Suppose war between us and Germany, and we block the Channel, would not the German fleet, to attack our commerce, be compelled to go round by the Atlantic? I will say no more about that. Then Lord Graham talked about defence and the cost of the defence; but surely he knows that the defence for both ends of the canal is already assured. We are building a naval base at Rosyth. Is

that going to be left undefended? We have all our great trade route to Glasgow; that is defended. Therefore, unless the enemy are to come in these marvellous flying machines with two tons of explosives, which is not within practical politics in the air, so far as I know, the defence is already assured. If a great engagement takes place in the North Sea or the Atlantic, it surely must be a very important thing that we should have a quiet place, unattackable, where the ships can be laid up and repaired. His lordship made another most extraordinary statement: that the total cost of this canal was going to be thirty-six millions. I want to assure him that, as a matter of fact, the total cost of this canal will be only twenty millions and no more. The interest on that amount at 3 per cent., is £600,000 a year, and therefore this scare with regard to double the cost is simply not correct as a statement of financial fact. With regard to the power of raising this money, I am prepared to state here that if the Government guarantee is given, the money will be subscribed to-morrow, and that is really the pertinent answer to the doubts cast upon the power of this proceeding going forward, because of the great risk and danger which is involved in the scheme. Then I would like to refer to his speech at another point. His lordship has referred to Portree and some other small places; but it must be remembered that some of these small villages, where few people live, are the headquarters of the fishing trade. Here the people, for instance, are very anxious to get their herrings as quickly as possible to different parts of the North Sea, the Baltic, and so on, and they suffer at the present moment because they cannot get their fish away. They are tied down by expensive railway freights and so on. It may not be a very serious sum, but every little helps, and every little ought to be considered when you are looking at a big scheme like this. If I may depart a little from Lord Graham's speech, I would like to say one or two words on the general question. I have been talking to some of the people in Glasgow, Greenock, and other places, and what I find is this:—There is a certain suspicion that if you make new trade routes from sea to sea, some of the trade will pass you by, and you will be therefore left stranded. What I think can be proved by statistics is that the general increase in the volume of trade always tends to benefit the places near which the trade passes. You are not to suppose that because a certain amount is deflected you are going to be left out in the cold. May I put it in this way? The number of tramways, omnibuses and underground railways has immensely enlarged the amount of travelling that is done by people who now no longer walk. The tramways, omnibuses and underground railways each thought they were going to be ruined by the other; but the immensely increasing volume of trade goes on and on, so that we do not know the end of it. Therefore you will find that, although people may look askance at it for the moment, because they are afraid they may be left high and dry, the real increase in the volume of trade is bound to help in the end even those who do not see that they are at present benefited. Lord Graham said: Why should not the canal go down through Dumbarton? The great thing, from the fleet point of view, is that you must go through in a hurry, and if you get into a narrow channel with all the traffic that is going on there, you will get jammed up at once. You would find that the whole traffic of Glasgow would be congested if you opened the canal down there at Dumbarton. There is one other point I should like to make before I sit down. It has been my good fortune, like the Duke of Argyll, to know the engineers of this scheme all my life. We were all at the same school—I believe in my old school. They were called in

without any other idea except that of devising the best means of making the canal from the one side of Scotland to the other, and they have entertained every possible suggestion. I have had the good fortune to look at the plans, specifications and so on, and the amount of thought, energy and enterprise that is displayed in them is somewhat remarkable. It is a thoroughly solid and worked-out scheme, and therefore ought to have at least the fairest consideration. It is a scheme which has been thought out from the top to the bottom with a view to providing the best accommodation at the smallest price, which is a thing you do not always get in the new ventures which are put before the public. I want to say, in conclusion, also, that here is a work which, from its inception, has been looked upon not principally as a money-making affair. It has been looked on as a scheme which might benefit Scotland, England, Ireland and the Empire, which would be carried through at a reasonable cost, but which should have a beneficence far beyond the immediate profits of any company-mongering proposal. Therefore, upon those grounds, I think this meeting ought to give the scheme at least its provisional support, and I think it might well do so.

Mr. L. GRAHAM H. HORTON-SMITH, F.S.A. Scot.:—I have listened with the greatest interest this afternoon, both to the paper of the gallant Admiral and also to the speeches of the Marquis of Graham and Mr. Rainy who followed him, and I hope that I may be pardoned if I venture to draw your attention to some aspects of the question which would hardly yet appear to have received the attention which, in my judgment, they so eminently deserve. As a rule, when one has but a few minutes in which to address an audience, the speaker's line must generally be to say that which he came to say rather than to waste the time of his audience, if indeed it could be called waste, in criticising or expressing his agreement with those who have preceded him. But I should like, if I may, to say a few words in regard to Lord Graham's observations as to the position at different times of the British fleets. I find that in August, 1907 (to give but a single illustration), the Channel Fleet was at Liverpool, on the west coast of this country, and that, too, at a time when (as shown by "Carausius" in the *United Service Magazine* for November, 1907) the Nore Division of the Home Fleet was certainly not in condition to bear the brunt of a hostile attack upon our eastern shores. So that it is quite clear that there are, or may be, times when a canal from west to east of this Island may not be merely of importance, but actually of vital service to the country, and, indeed, may even be the means of saving the country in the hour of war. Lord Graham referred again to the question of cost. Of course the question of cost may be important, but it is not the point of view from which I think the Government, strictly speaking, if actuated solely by the desire to preserve this Empire, should regard the matter. Either the canal is strategically a good one for this Empire to have, or it is not. If it is not, I for one care nothing about it; and again, if it is not, the Imperial Maritime League, which I represent, might not unanimously have passed a resolution in favour of it. One point only in regard to the canal, as originally proposed by the Admiral, did the League reserve. It was this: that the canal, in order adequately to safeguard our interests, ought to have, as one of the photographs shows it now is to have, a secondary exit into the Firth of Forth by means of a cutting to be made from the West of Rosyth (across the projecting promontory) to the Firth of Forth on the east, of such nature that in the event of the Forth bridge being

blown up, and access to the sea on the east being thereby interrupted, the ships at Rosyth might yet be enabled to obtain access through the Firth of Forth to the North Sea. Another point of vast importance, which has not, I think, been touched upon to-day, is that the canal would enable the Clyde docks to be of more immediately effective service in time of war in the case of ships crippled on the East Coast. Certain canals have been referred to this afternoon. Certain have not. It is with the latter, in the main, that I propose to deal. The Panama Canal has been mentioned. That canal has been calculated by eminent authorities to be likely to double the striking force of the American fleet in the event of war. Lord Graham drew a distinction between that canal and this proposed canal. There is, I quite agree with him, a very important difference; but I do not think that it is a vital difference. The wars of to-day are, and will be, wars ever narrowing in time, ever shorter in their duration. It has been estimated that the next naval war with this country will not last more than seven days. If our ships do happen to be on the west coast of Scotland or on the west coast of England, when that war commences, it will take them about three days to get round to the east coast, and they will, or may, then probably be too late. Therefore, although the Panama Canal differs from this canal, in that on the one hand you have a voyage of some 14,000 miles to get from west to east or east to west, and in this case a much shorter voyage, nevertheless the distinction is not so great, I submit, as it might at first sight appear to be. Perhaps you will now be so kind as to focus your gaze for a moment on the map showing the East Frisian Islands, though I should like to preface my remarks in that connection by saying that even the admirable map which is exhibited on the wall does not show you the full extent of the naval advantages now possessed by Germany in regard to the North Sea. You will see Brunsbüttel at the western end of the Kiel Canal; at that place they are now projecting, if, indeed, they have not already commenced, two Dreadnought docks. If you will carry your eye along the hundred miles of coast from Brunsbüttel to the Island of Borkum (the most westerly of the East Frisian Islands), you will see a coastline big with fate for the British Empire, if we do not make full provision in the near future to meet the ever-increasing danger thence arising. If you carry your eye west from Brunsbüttel, you will arrive at Cuxhaven—a German naval base and very strongly fortified; and at the western extreme of these 100 miles you will notice the mouth of the Ems, on which Emden stands, and between the two, looking again from east to west, you will notice also Bremerhaven and Wilhelmshaven. At Wilhelmshaven to-day there are three *Dreadnought* docks ready, and at Bremerhaven another; while we have not a single dock on our east coast capable of taking a crippled *Dreadnought*. At Emden (which is only 278 miles distant from Hull) they are making a first-class torpedo base; and, further, enormous wharves have there been built for the rapid embarkation of troops; and every other possible method is being utilised also for making Emden a port of first-class importance to the German Empire. It has the additional merit of being a free port. Now let us see what the Germans have done by way of canalisation to increase their strength upon this coastline. Years ago there was a canal built between Emden and a place called Aurich, about half-way between Emden and Wilhelmshaven. Later on an additional canal was built connecting Aurich with Wilhelmshaven itself. That additional canal was completed in 1886. Last year they widened the entire canal from Emden to Wilhelmshaven—it is now known as the Ems-Jade Canal—so as to allow of the passage of the largest class of

destroyers; and they propose to carry that scheme of canalisation yet further by at once building a canal across the piece of land which at present separates the Jade Bay (upon which Wilhelmshaven stands) from the estuary of the Weser (on which stands Bremerhaven), and so link up Wilhelmshaven with Bremerhaven. If Count von Reventlow's scheme is carried out, the Ems-Jade Canal itself will later be converted into one capable of taking battleships; but for the moment, happily, that scheme is in abeyance. But the extent of their canalisation does not end with what I have at present mentioned. They have, in addition, a canal known as the Ems-Dortmund Canal, completed in 1899, which, starting from Emden (where it meets the Ems-Jade Canal), joins the Ems at Oldersum, a few miles away, and, separating again from the Ems at Meppen, goes right down to the Westphalian coal measures (a very important matter), and links up further the important works of Messrs. Krupp at Essen—those works, the great extension of which (with the consequent acceleration of German naval construction), for so long remained either unknown to, or unaccountably unheeded by, our Admiralty. Reverting to the Ems-Jade Canal, you will see that if this canal will enable torpedo craft of the largest type to go from Emden on the one side to Wilhelmshaven on the other, and *vice versâ*, there are, to say the least of it, two exits which will have to be blockaded along this particular coastline, apart from the exit by the Kiel Canal. Lord Graham is quite right in saying that the frontier of the British Empire in the hour of war always has been, and, if the Empire is to stand, must be, "the enemy's coast." I would like to ask you, however, to bear with me one moment more while I tell you something about "the enemy's coast" when we are considering German strength and German facilities on the North Sea to-day. In the old days, when we formulated that doctrine, there was only one exit from the Baltic for Germany, and it was nowhere near Emden, Wilhelmshaven, Bremerhaven, Cuxhaven, or Brunsbüttel. It was right away to the North of Denmark, by the Skager Rak. If our fleet was massed there, and was in a sufficient superiority, which was held to mean a superiority of five to three, presumably we should have smashed the German or any other fleet which might have endeavoured to force a passage through. Now, however, the Germans have the second exit by the Kiel Canal, and further, as I have said, they now have these additional exits (to which I have referred) at Emden and Wilhelmshaven. There is, moreover, a further difficulty when we are considering how we can make this German coastline our frontier. For this reason. This particular part of the world—the particular 100 miles which I have mentioned—has, from the time of Pliny onwards, been subject to the most extraordinary vagaries of Nature. The sands have silted up in some places; in other places the opposite operation has taken place, and the net result is that this coastline, in addition to being protected on the North, for the larger part of its extent, by the East Frisian Islands, is protected yet further by mudbanks and sandbanks extending a great distance from high water mark into the sea to the North. Indeed, in order to understand the nature of this coast a naval chart needs to be consulted rather than a map. Really, the coastline of the German frontier there, is from four to six miles out to sea, and without the most experienced pilot it would admittedly be highly dangerous for a modern warship to approach this German coastline. Consequently the British fleet would have to stand out to sea about six miles north of these islands, and would be unable to see what was going on behind—that is, to the south of those islands. First of all it might not be possible to tell whether the German ships were at Emden or Wilhelmshaven, or

some at one and some at the other, and secondly, even if that were known, it might still not be possible to say (owing to the facilities already accorded to destroyers, and later to be accorded to battleships, by the Ems-Jade Canal) from which of the two they might eventually decide to issue in force. Notice, again, to the east, the mouth of the Elbe. The real entrance to the Elbe (on which, of course, Brunsbüttel stands) lies nowhere near the shore, but four miles to the north of Cuxhaven.

The CHAIRMAN:—I do not want to interrupt this most interesting speech, but I think it is rather leaving the point. We are discussing to-day the other canal. I quite realise that the speaker is referring to the strategic point, but I do not think we require to go into all this detail, although it is most interesting, and I should very much like to listen to it.

Mr. HORTON-SMITH:—I have very nearly come to the conclusion of the remarks which I desired to make. May I only just add that the difficulties which would be experienced by a British fleet in the endeavour to blockade the series of exits to which I have referred appear to me to have been immeasurably increased by the cession of Heligoland to Germany. The reason I have gone into these details is this—and I am sure Lord Saltoun will pardon me for saying so—that upon the last occasion, when I went into these matters (at a meeting held in this hall on 17th March last), I was told afterwards by several gentlemen amongst the audience that they regarded them as of the utmost value to the discussion, both as showing the enormous strength which Germany has upon this fateful coastline, and also because they held (as I hold) that this fact alone enormously increases the importance of the point under consideration to-day, namely: Is the Forth and Clyde Canal strategically necessary or not? That was the point to which I was leading up. The greater the strength you can see that Germany has on the North Sea coastline, to which I have referred, the greater the necessity for increasing every possible strategical advantage for ourselves in that Sea. Speaking for myself, I cannot but hold the view that the proposed canal would enormously and in every way increase the striking force of the British Navy in time of war. I think I really need not add anything further. I am sorry if it could be thought that I have in a sense left the Forth and Clyde Canal, by transporting you in imagination to the German coast. But the reason I have done it is this, that unless you bear in mind what has already been, and what is even now being effected, upon the German coast, with reference not only to its particular land-features, but also with reference to the material power of Germany on that coast, you will never get the British public as a whole to appreciate—although, possibly, educated people might—the necessity for the construction of the Forth and Clyde Canal.

Major W. L. FORBES (late Royal Fusiliers):—There is one point referred to by the last speaker with regard to Germany that I should like to call attention to. All his arguments were in favour of the strategical value of the canal. But Emden, the place he mentioned, is most important to my mind as bearing on the value of this Mid-Scotland canal from a commercial point of view. As the speaker said, Emden has been connected by a large canal with the Rhine, and the result is that a ship can now practically go from Emden to the Black Sea. It is hoped by many Germans that the trade of the Rhine will thus be kept in German territory until it passes out at Emden, without going through Holland at all. The

Mouth of the Forth lies almost in the direct line of the great timber trade of the Baltic, and this timber and the Canadian trade of Hamburg, as well as that of the great port of the future at Emden, should eventually go by the direct route through Scotland. I was very much struck with the remarks of the noble Marquis, who seemed to be so much opposed to the canal. After the very lucid explanation that has been given us by the gallant lecturer, I hardly see how a great many of his lordship's remarks can be borne out by fact. The Kiel Canal was made, at what was considered a great cost, to serve very much the same purpose as the lecturer now advocates on behalf of our Navy—to double the value of the fighting ships of Germany. The result of the Kiel Canal has been so important a factor in regard to the canalisation of the German Empire at the present moment that our northern neighbours have not only, roughly speaking, more than doubled the length of the great canals of the Empire, but they are now pushing forward great canals which will carry ocean-going ships into the remotest parts of Germany. That does not look as if the canals of Germany were not a success. We also know what the canal system has done for France. There are canals all over France, with railways and good roads alongside them. Anybody who travels through that country, particularly anyone who goes down to the South of France, cannot fail to see the beneficial results of these canals on the industries of the country. And it is the same in other countries. Look, for instance, at the Panama Canal. A few years ago it was said it could not be made, but the Panama Canal is going to be made. It is not a question of a few millions of money. I think the last calculation of the cost was 250,000,000 dollars; but even if the Panama Canal costs 500,000,000 dollars the American nation is behind it, and the construction is assured. Ample arrangements for its defence are being provided, and it is equally certain that our own naval and military authorities are perfectly well able to provide for the defence of the ingress or egress of the proposed Scottish canal. Another point that I think might be worth notice, because it was not very much enlarged on by the lecturer, is the length of the canal. It is only sixty-five miles long, whereas if a ship has to come round by sea from Edinburgh to Glasgow, the distance is either 500 or 900 miles. There is thus an immense difference between the length of journey a vessel would have to make in working through the proposed canal and going round by sea. Another point which Lord Graham advanced was that it was hardly worth while to quote the opinion of a small town like Portree. But the lecturer has quoted communities situated as widely apart as Glasgow and Dundee, and has told us that both these towns are in favour of the scheme. There is yet another point I should like to mention with regard to the present canal. Many people think that as there is already a barge canal it might be enlarged. But the present canal runs through a congested and very busy district; all kinds of works and industries have grown up alongside it, and there would be great difficulty in constructing a canal on that route which would comply with the conditions of the Admiralty, who require that the canal shall have a depth of 36 feet. The line, as advocated by the lecturer, runs, roughly speaking, through what I should call a flat country, and it appears to me that the construction of the canal should be a very simple task. At the same time, however, the configuration of the country on the northern side lends itself very much to the easy construction of bridges to carry the great railways over the canal, so that there will be no congestion and no delay caused to the railway systems which may have to cross the route. Lastly, allusion has been made to the fact that the proposed canal would pass through and destroy the amenities of

a historic and beautiful part of Scotland; but almost at the heart of the country, through which it is proposed to take the canal, is the town of Stirling, and we are told that that town advocates the scheme.

T. MILLER MAGUIRE, M.A., LL.D. (Barrister-at-Law, Inner Temple):—My speech has almost been taken out of my mouth by the disappearance of the map. I should not have spoken to-day but for the remarks of the gallant Marquis. The difficulty with regard to the matter is that his remarks might be applied to every canal under every circumstance, especially to great canals, which have strategic as well as commercial objects. One of his lordship's arguments was that the canal could be destroyed in a few minutes by aerial monsters. That does not frighten me in the smallest degree. A nation that can go under the sea in submarines can, if it pleases, work in the air equally well. In all such enterprises there is risk, and also retaliation is possible. Supposing our canal is going to be destroyed in a few moments by these aerial monsters, why should not the Suez Canal be destroyed in the same way? Why should not the Kiel Canal even be destroyed? Why should not the Panama Canal, if it is ever constructed, be destroyed? This argument applies equally to the destruction of every canal and of every great railway bridge, Forth, Tay, or other. The noble Marquis's argument about the beauties of Nature appealed to me, especially as I am told that there is only one fog off the Irish coast for ten fogs off the English coast. I was glad to hear of it. But surely you are not going to put the beauties of Nature against the permanence of the Empire! The same argument applies with regard to many enterprises. It was said with regard to the railways that they would destroy parks and obliterate all the beauties of Nature, and motors are the horror of all pedestrians on our beautiful country roads. But supposing we had listened to such an argument, where would the commerce of England be? If this island be the workshop of the world, and one of the greatest centres of its industrial enterprise be Glasgow, you have only to use your eyes to see at once that the proposed canal, especially at a time when the canal movement is daily growing in importance and when water transit is ten times cheaper than rail transit, would be of the greatest service to this island. Remember that other countries have many canals, one of which is one thousand miles long, and which was finished in the year 1889. The Chinese constructed magnificent canals many centuries ago. If these undertakings can be successes by other nations, why should not the British succeed? They ought to be in front and not behind. Apparently we are behind in military enterprise, in educational ability, and scientific invention, and now when the great world-wide importance of inland navigation is beginning to be realised, we are to be afraid of that too! Why should we not lead instead of lagging behind? The gallant Admiral said the canal would cost 20 millions, and the Marquis of Graham said it would cost 36 millions. But remember that we spent one thousand millions in strategy against the French in twenty-two years, 1793 to 1815. With regard to the ease whereby the people of our island can construct enormous works like the proposed canal, bear in mind also that we spend twenty millions a year on a contemptuous and odious game called golf, where people knock balls about for no useful object and in pure selfishness, and we spend, according to Lord Willoughby de Broke, in his most sarcastic and contemptuous article on "Sport" in the *National Review*, ten millions of pounds on hunters, and ten millions of pounds on hunting. We also spend ten millions on motors and about five millions on football, and similar spectacular so-called "sport"—altogether about sixty millions a

year, most of it in tomfoolery, and yet we cannot absolutely spend a million a year, if not less, which will be the interest on this canal—I am now told it is £600,000 a year. Yet we can spend twenty millions a year on golf. I have done with that argument. We are not children—we are men. We must not lose our Island—our Empire—for such considerations. I would like to point out the *vis vitæ* of the British Empire. The soul of the British Empire is the United Kingdom, but that map does not at all represent the truth of the situation. I am always sorry when I see a mere map of the United Kingdom at these lectures without a map of the world. There ought to be a permanent map in nearly every public building in England and the Empire about the size of the wall. The whole question with regard to these Islands, according to Sironi, and every strategic geographer who goes to the root of the matter, is their relation to the whole traffic of the world, to international strategy. We may be at war—I am not speaking of Germany only, I have the greatest possible admiration for Germany; I wish we had half the brains of the German people, and half their capacity for using them. We may be at war with other States besides Germany. Ten years ago we were thinking of fighting France, and we might have to fight the United States—we have fought them before. Now consider the enormous value of the great Scotch canal under any of these circumstances.

The CHAIRMAN:—I think you are a little diffuse; you are getting away from the point of the paper.

T. MILLER MAGUIRE:—The point which I want to emphasise is that the position of these Islands is decisive of the value of the canal—as to the German Ocean and the Atlantic, and as to every possible passage from the Atlantic, round the top of our Islands, or from the Baltic, north or south. Anything that facilitates connection between the disjointed sections of our own naval forces, or is on the flank of any adverse movement, as that canal must be, is worth not merely £600,000 a year but £1,600,000 a year. I cannot agree therefore with any of the remarks of the noble Marquis, at which indeed I am surprised, inasmuch as I believe it would be a financial boon to Scotland and not detract in the least from the attractions of the charming district, from the Trossachs to Loch Lomond. I venture, then, to give the heartiest support to the views of the lecturer. The canal system of our Isles, both in Great Britain and Scotland, has been too long ignored and overshadowed by railways. The future of commerce may be with canals!

Lieut.-Colonel A. D. SETON (late Fife Royal Field Reserve Artillery):—I only rise for the purpose of asking the gallant Admiral to be good enough in his reply to give me a little information with regard to Loch Long. I know Loch Long pretty well, and it appears to me that to make it effective as an entrance to the canal it would be necessary to do a good deal of dredging there. Nothing has been mentioned about that, nor anything in the way of cost in connection with it. The Loch, as you can see from the map, is extremely narrow, and as far as I know the deep water channel is even narrower; and therefore it appears to me a considerable amount of dredging would have to be done. I would also like to know what kind of arrangement would be made for the entrance to the canal at the Arrachar end, because there is already very little room there? The captains of the steamboats will tell you it is extremely difficult to get alongside the pier at Arrachar if there is a strong wind blowing,

and there is a lot of shallow water there, so that it would require a good deal of dredging to make it suitable for the purposes proposed. Personally, I am entirely in favour of the canal, and I am very glad to find the scheme has gone so far as it has. There is one point I could not understand quite clearly, but I have no doubt the Lecturer will answer it. I know my countrymen pretty well, and I wish to tell him and those who are associated with him, that there must not be any uncertainty with regard to anything connected with the canal. There does seem to be a little uncertainty as to whether it will be the Tarbet and Arrachar cut out of Loch Lomond, or whether it will be through Dumbarton. I understand there are great physical difficulties with regard to the Dumbarton route, apart from the narrowness of the Clyde at Dumbarton; but in the very pretty picture which was exhibited, the Tarbet and Arrachar cut was not shown at all; the canal was shown as going through Balloch, which perhaps was the early scheme. I think that should be corrected, otherwise my careful countrymen will say: "We will wait until it is a little more settled before we go in for it." I only add that little piece of friendly advice—do not leave anything to chance in a matter of this sort.

Mr. STEVENSON:—I should like, in reply to Colonel Seton, to say that in Loch Lomond there is ample depth of water at present for any ironclad—there is between 50 and 100 fathoms depth, so that there is no need for any dredging.

Colonel SETON:—I know there is a lot of water in the centre.

Mr. STEVENSON:—It is amply wide enough for as many ironclads as you like.[1]

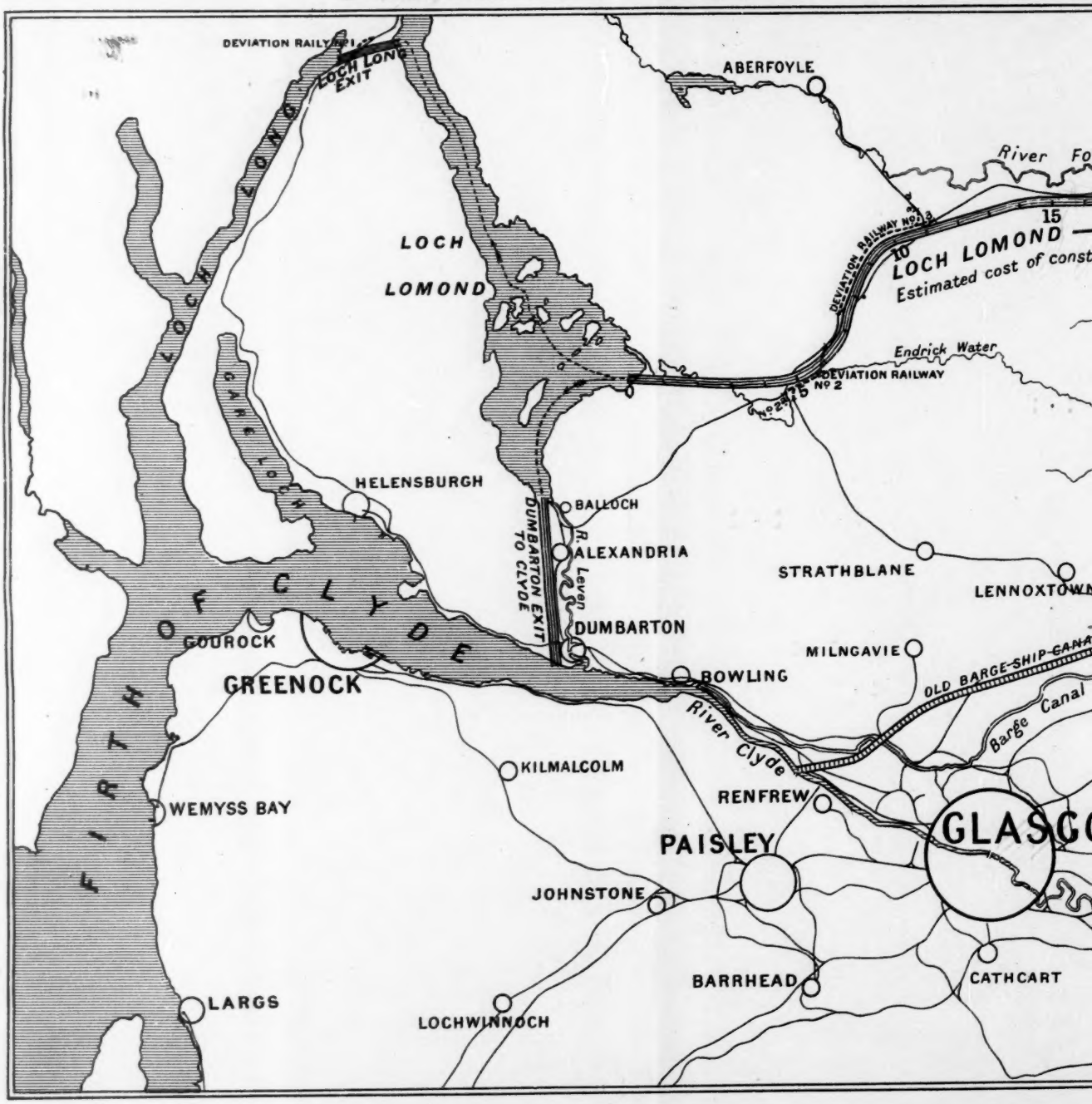
Colonel E. ST. C. PEMBERTON, R.E.:—I think that if the canal justifies its construction on strategic grounds there remains very little further to be said, considering the political position of Europe at the present moment. Whether the canal will cost 20 millions, 30 millions or 40 millions, is to my mind quite immaterial. We are a wealthy country, and if the canal is necessary for the safety of the Empire, why for heaven's sake let us construct it at all costs. The Marquis of Graham raised a point as to whether it would not be futile to imagine that when this country was being menaced or on the outbreak of war, our ships could be in the wrong place. I can imagine many unfavourable circumstances that might arise which would tend to leave ships in the wrong place at that critical time, and therefore I say that if the construction of this canal would tend to leave nothing to chance, let it be constructed. I will give you an example, if I may mention it, in the Russo-Japanese War. At the outbreak of war one-half of the Russian fleet was at Vladivostock and part at Port Arthur, two naval bases separated by hundreds of miles. The whole result of that war might indirectly be attributed to the fact that the Russian fleet was not concentrated at one spot, either

[1] Either Mr. Stevenson misunderstood what I said, or is wrongly reported. I never questioned the depth of water in Loch *Lomond*, but did, and do, doubt if there is a channel of sufficient depth near the head of Loch Long to admit of two heavy ships passing one another. My ear did not detect at the meeting that Mr. Stevenson said Loch *Lomond* instead of Loch *Long*.—A. D. SETON.

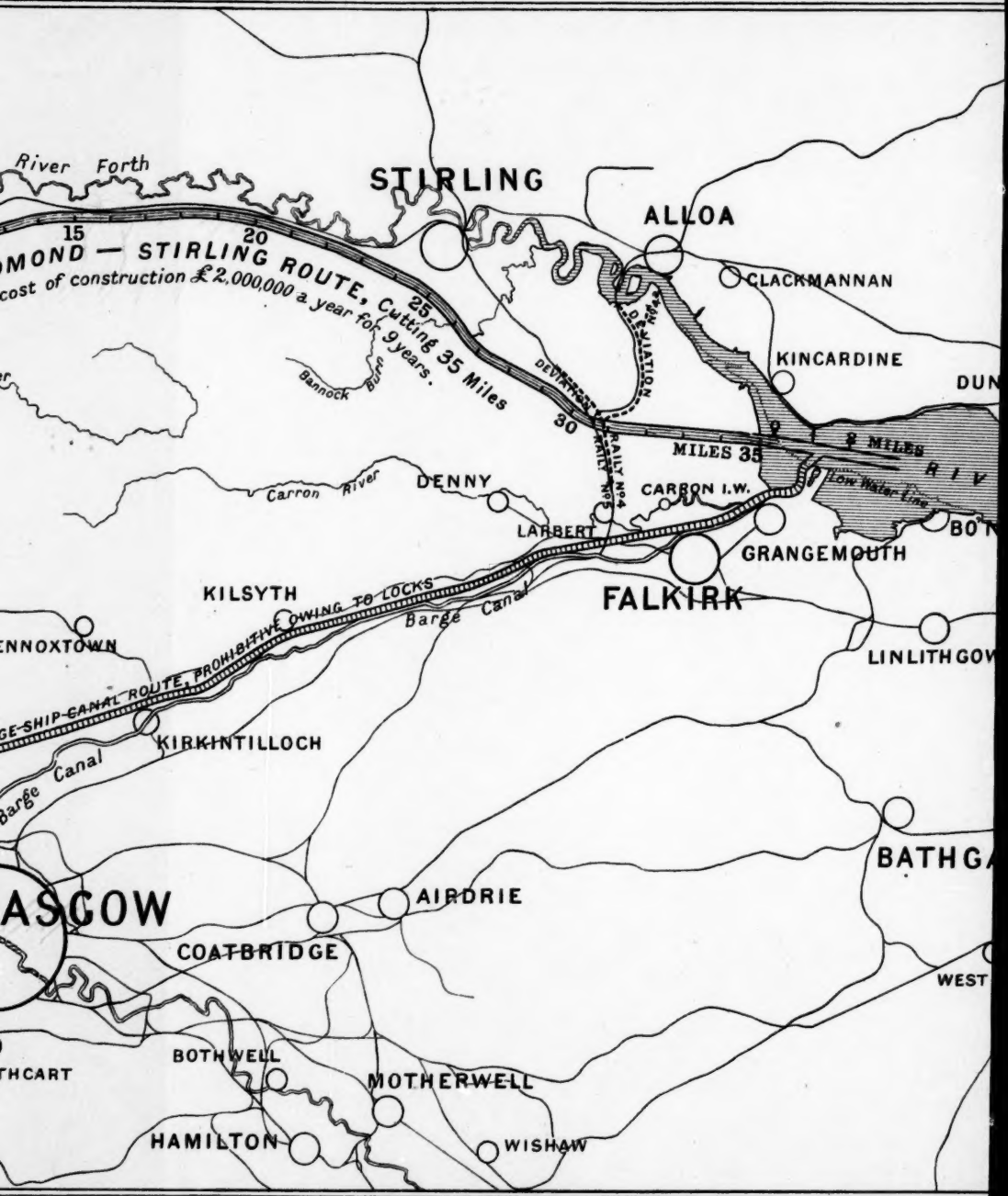
Vladivostock or Port Arthur, or elsewhere, at the outbreak of the war. It is difficult to say to what causes the Russian defeat can be attributed, but that was certainly one cause. What I imagine might be the condition of things is that ships would not be brought into the North Sea because the Cabinet would be afraid of doing anything which might provoke hostilities. That is a real danger. I know it has been repeated over and over again that it is a wrong thing to say, but it is no less real, and it is more real now in these democratic times than it has ever been before. I do not think the Cabinet will put the ships where they should be for fear of giving offence. On many occasions the forces of this Empire have not been in the right place at the right time. At the time of the South African War were there sufficient forces in South Africa? No, because it was said it would bring on war; and in the same way the same argument will be used with regard to the North Sea.

Vice-Admiral Sir CHARLES CAMPBELL, in reply, said:—So very little has been said in opposition to the proposed strategical and commercial waterway, nearly everybody having spoken in favour of it, that I shall not have to detain you very long in my reply. I have to thank one speaker, however, for the remarks which he made about the canal, and that is the Marquis of Graham. I am really deeply indebted to him for what he said. He mentioned one point which I quite expected to hear to-day, that the locks might be attacked by airships. I am quite willing to grant that airships might injure the locks, if means are not taken to safeguard them; but the same may be said of all railways, docks, ships, etc. We shall have gates on Loch Lomond at entrance and exit, to minimise risk, and if the locks are open to be attacked by airships they must be defended by airships, and even if the airship attack were successful, the canal would have done good in the first place before that. While I am speaking on that point, I should like to say that I happen to be on the Committee of the Aero Club, and I do not suppose that we in this country are going to be so supine as to do nothing with regard to aerial navigation. We shall have an aerial defence if the national interests require it. If there is a lock there, and you expect it to be attacked by airships, of course you will put an airship on duty there—there is not the slightest difficulty about it. The sources of attack can, and must be, met as they occur, and therefore I may fairly claim that that particular criticism of his lordship is not successful. Then reference was made to the Panama Canal and the special difficulties connected with its construction. In the other canals which have been made, special difficulties have had to be overcome, and enormous sums of money have been expended on them. Why? Because the Governments of those countries believed that it was essential that the canals should be made; and if we can only persuade our Government that it is essential, as I believe it to be, that this canal should be made, there is no reason why we should not run the risk of spending a paltry sum of four million pounds, that being the extent of the national risk in making the canal. The canal would not do away with the necessity for the torpedo factory on the proposed site. In fact, it is an additional reason for it. You can protect the canal and render the range available for either coast. Nothing but an airship could get up to touch the locks, because there is the whole of Loch Long to be traversed, and how are they going to get up that space? You can have the lock a few hundred yards up the canal, and perhaps round the corner if necessary, and make the curve there. There is no reason why you should not do that. Then another question was asked, which I thought was covered by the clear

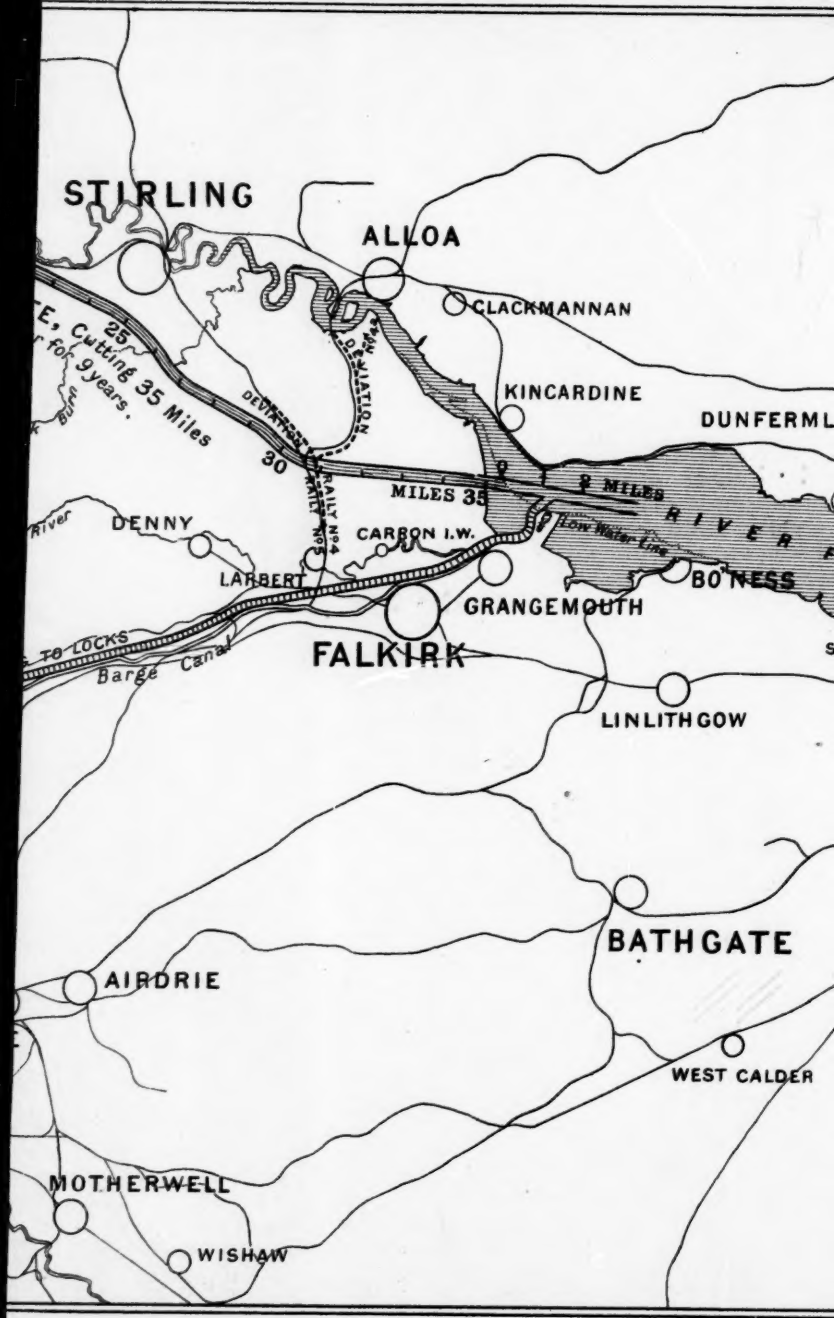
FORTH AND CLYDE BATTLE-S



LE-SHIP AND OCEAN-GOING STEAM



OCEAN-GOING STEAMER



MER CANAL.



Stanford's Geographical Estabt, London.

MAP
SHOWING COMMERCIAL ADVANTAGES OF THE
FORTH & CLYDE CANAL

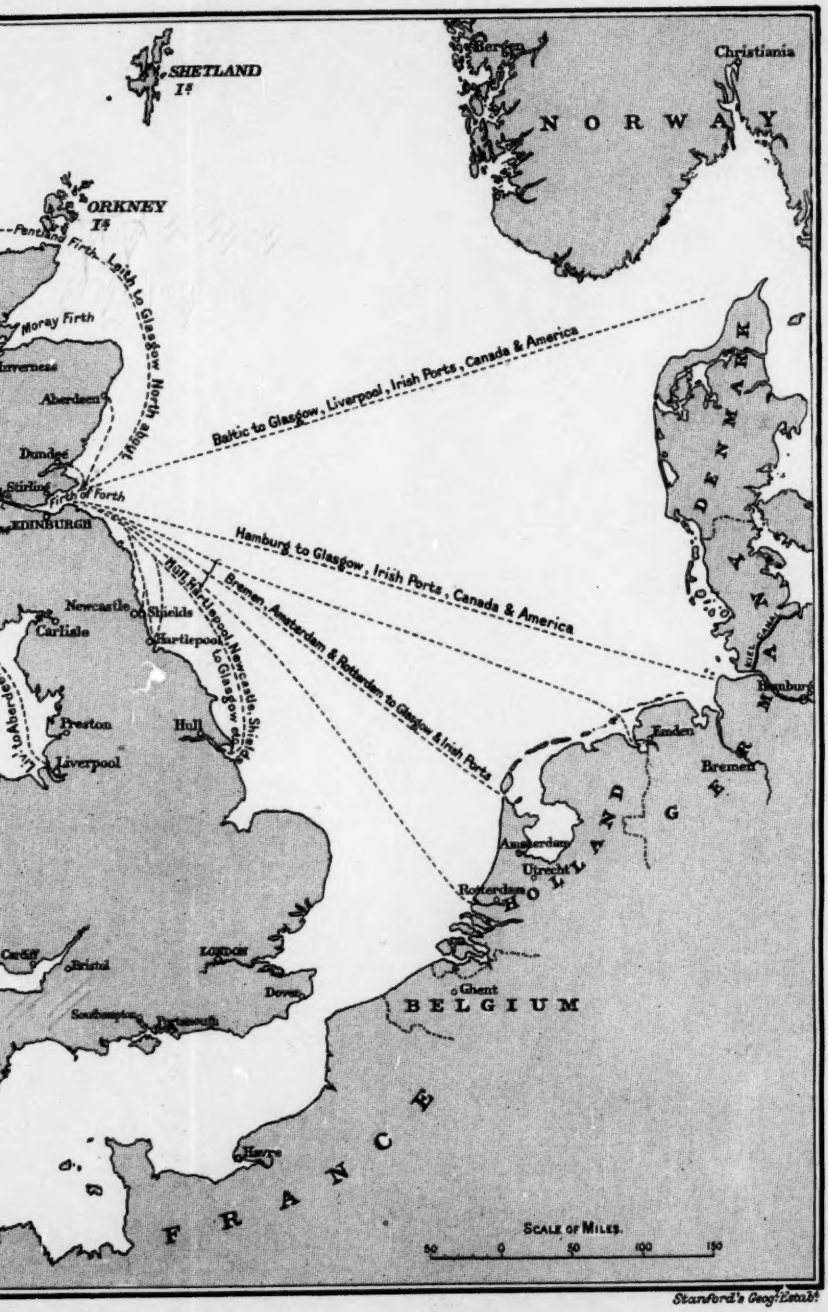
Forth & Clyde Canal National Association
26 SHAFTESBURY AVENUE
LONDON.

	Miles
From GLASGOW to EDINBURGH *via* North,	500
" " South,	900
BY CANAL, - - - - - - -	65

DISTANCES SAVED.

	Miles		Miles
London to Belfast -	109	Aberdeen to Glasgow -	341
" Glasgow -	271	" Liverpool	218
Hull to Liverpool -	264	" Irish Ports	300
" Belfast - -	208	Dundee to Glasgow -	434
" Glasgow - -	626	" Liverpool -	318
Newcastle, Shields, etc. to Glasgow -	449	" Belfast, etc.	204
Newcastle, Shields, etc. to Liverpool	333	Hamburg to Glasgow	487
Newcastle, Shields, etc. to Belfast -	256	Copenhagen "	487




SHETLAND Is
ORKNEY Is
Pentland Firth
Moray Firth
Inverness
Aberdeen
Dundee
Stirling
Firth of Forth
EDINBURGH
Leith to Glasgow North about
Baltic to Glasgow, Liverpool, Irish Ports, Canada & America
Hamburg to Glasgow, Irish Ports, Canada & America
Hull, Hartlepool, Newcastle, Shields to Glasgow &c
Bremen, Amsterdam & Rotterdam to Glasgow & Irish Ports
Newcastle
Shields
Carlisle
Hartlepool
Preston
Hull
Liverpool
to Aberdeen
Bergen
Christiania
NORWAY
DENMARK
Kiel Canal
Hamburg
Emden
Bremen
HOLLAND
Amsterdam
Utrecht
Rotterdam
Ghent
BELGIUM
Cardiff
Bristol
LONDON
Dover
Southampton
Portsmouth
Havre
FRANCE
SCALE OF MILES.
50 0 50 100 150
Stanford's Geog.l Estab.t

PRINTED FROM **THE GRAPHIC, June 12, 1909**

A Great Waterway Scheme: The



DRAWN BY HAROLD OAKLEY FROM DES

e: The Proposed Mid-Scotland Ship Canal



Y FROM DESIGNS BY ADMIRAL SIR CHARLES CAMPBELL

statement I made at the beginning, as to the selected route? The route advocated by the Canal Association is out at Tarbet, at the top of Loch Lomond. By and by there is not the slightest reason why a smaller craft canal should not run down the Leven, so as to get quickly into the Clyde; but as I said, there is first of all that bit at the bottom of the south end of Loch Lomond, which is not deep enough, and has a rocky bottom, which it would be very difficult to deepen by dredging. We have given up all idea of making a battleship canal by Dumbarton; it is prohibitive, in the same way as the locks and other matters are prohibitive on the high level route. Anyone who studies the subject will come to the conclusion that there is only one possible route for a battleship canal from one sea to the other, by which the ships will pass through in eight hours. Before sitting down I beg to thank this large gathering for their attendance and sympathetic encouragement, and I should like to add that I am far more indebted to the Marquis of Graham than anyone of you, because he has brought a little opposition into the matter, which has given a fillip to the discussion. In no existing institution are national questions more freely or more impartially discussed than this one; and I venture to hope that the ventilation of this important subject to-day will add one more to the many services rendered by the Royal United Service Institution to the strategical development of the national resources for defending our homes. We cannot afford to leave one stone unturned in our efforts to retain the command of the North Sea by increasing the mobility of our fleets, and I confidently state that when the strategical and commercial advantages are thoroughly grasped by the public, the possible loss of the advance of four millions sterling will be faced and the mid-Scotland canal will be constructed.

The CHAIRMAN (Lord Saltoun):—I will not detain you more than a few minutes in making some concluding remarks. The chief reason that I rise is to congratulate the gallant Admiral, as I am sure you will all do, on the excellent paper he has read; and I also think you will agree with me that the opposition which the noble Marquis has raised to the scheme has given a great fillip to the discussion, and materially assisted it. Whether, when he has further considered the scheme, he will find himself able to fall in with it or not, is a matter which, of course, must rest with himself, but no great scheme was ever suggested, and no great scheme was ever carried through without opposition of a very strenuous kind, and the greater the opposition the more honour to those who overcome it and persuade their opponents to fall in with them. It is now my duty to ask you to give a very hearty vote of thanks to the gallant Admiral for his lecture. I have no doubt that the scheme will now be aired, will go through to the country, and that we shall see what will come out of his efforts in the near future. We know that there has been an inquiry into the matter, and that a report is to be placed before Parliament. When the decision has been announced, and the report has been discussed, it will throw more light on the matter. In the meantime, I am sure that we all join in thanking the gallant Admiral, and in expressing the hope that the scheme may have the support of a very great number of his fellow citizens.

A Glance at what Other Nations are Doing.

France. — Internal system of waterways, costing £120,000,000, independent of the proposed Havre-Paris-Marseilles Canal and the Bordeaux-Narbonne Canal, which may be delayed, but which will be carried through ultimately.

Germany has spent and is spending some £20,000,000 on making and deepening the Kaiser Wilhelm Canal to take the largest battleships. She is also linking up other canals. In 1905 nearly seventeen million sterling was sanctioned for a waterway from the Rhine to the Weser, with branches and a connection between the Oder and the Vistula; and it is proposed to connect the Danube and Rhine at a cost of seven million sterling. Plans have just been sanctioned for a canal from Kiel to the Elbe.

Austria is linking up the Danube, Oder, Moldau, Elbe, and the Werchsel rivers at an outlay of 31 million sterling.

Russia has ambitious projects from Lake Onega to the White Sea, and last year opened a ship canal 24 feet deep establishing free communication between the Black Sea and the Sea of Azoff.

Greece.—The Corinth Ship Canal, three millions.

Italy.—Project to connect the Adriatic with the Tyrrhenian Sea at a cost of 24 million sterling.

Sweden has connected the Baltic with the North Sea.

America is expending gigantic sums on the connection between the South Atlantic and Pacific, and at a cost of 100 millions sterling the creation of a vast system of international waterways, linking up the great lakes.

Canada is about to spend at least twenty millions on a project to connect Lake Huron and Montreal.

Other Canals.

Kiel.

It is always well when trying to forecast the amount of success that may be reasonably expected as the result of any great undertaking, to base our expectations on the result of some similar scheme already in operation. In this case, from the strategical point of view, we have the Kiel Canal, which has given the German fleet a safe and easy route into the North Sea, with which they are so satisfied that they are spending an additional eleven millions in deepening it to float the battleships now building and of the future. It was never considered to have great commercial prospects, and is dependent on through traffic, besides being seriously handicapped by the Skaw route. Notwithstanding, the tonnage for the year ending 31st May, 1897, was 1,848,458 tons, and the revenue was 1,016,854 marks, which in the corresponding year 1907 had increased to 5,963,125 tons and 2,945,550 marks. For the year 1908 there was an increase of traffic of 1,840 vessels and of 460,316 tons

register. The traffic round the Skaw is rapidly being diverted to the canal, and the same result will follow in the case of the Forth and Clyde Ship Canal.

Amsterdam.

No strategical importance. Revenue in 1902, 5,900,000 tons used the canal; in 1906 over 7,000,000.

In the above the geographical conditions and the volume of trade are so dissimilar to those of the Forth and Clyde that we shall have to look nearer home for an example upon which to base our calculations. The estimate of traffic and the beneficial results to the surrounding districts may be best arrived at by studying what has actually taken place in the case of the Forth and Clyde Barge Canal and the Manchester Ship Canal.

Existing Forth and Clyde Barge Canal.

The revenue has increased from £68,010 in 1906 to £77,968 in 1907, an increase of nearly £10,000 in a bad trade year.

The Manchester Ship Canal.

No route has the double advantage of strategy combined with commerce, which is such a prominent feature of the Mid-Scotland National Ship Canal; but for the commercial prospects we may expect to compare favourably with the result in the case of the Manchester Ship Canal in the traffic returns, and even more so in the rise in the value of property all along and in the vicinity of the line of route, and we must bear in mind that Manchester is a *cul-de-sac*, and not an oceanic and intercoastal highway from sea to sea.

Since the opening of the Canal the total tonnage in traffic and the total yearly revenue have been :—

Year.	*Tons.*	£
1894	925,659	97,901
1895	1,358,875	137,474
1896	1,826,237	182,330
1897	2,065,815	204,664
1898	2,595,585	236,225
1899	2,778,108	264,775
1900	3,060,516	290,830
1901	2,942,393	309,517
1902	3,418,059	358,491
1903	3,846,895	397,026
1904	3,917,578	418,043
1905	4,253,354	449,436
1906	4,700,924	498,937
1907	5,210,759	535,585
1908	4,582,496	506,975

Up to the present time the expenditure on capital account has been nearly £17,000,000.

A record such as that disclosed by these figures proclaims the success of the Canal. It could not be expected that the sanguine expectations of its brave promoters should be fully realised in the comparatively short period that has elapsed since the venture was consummated. But wonderful progress has been achieved. Mr. W. H. Hunter, who is now the chief engineer, declared, in a paper read at the International Engineering Congress in 1904, that "the operation of the Manchester Ship Canal has directly or indirectly affected beneficially the whole of the greatest industrial district on the face of the earth—a district of which the present population does not fall far short of 10,000,000 persons — while in the more limited area, of which the city of Manchester is the heart and centre, many industries have been saved from extinction, and many others from decline and ultimate decay."

Between the years 1880 and 1890 "it was only too apparent," said Mr. Hunter, "that in Manchester and its environment of manufacturing towns decadence was stamped upon almost every industry, and that all progress was arrested. One manufacturer after another moved his works to the sea-board, leaving disused factories, empty warehouses, and uninhabited dwellings. . . . . Now, not only has decline been arrested and decay averted, but lines of new and vigorous growth have shot, and are shooting, out on every side. North, south, east, and west, there is no exception—expansion is universal. Old industries have been revived, and new industries have been introduced. The change is definite and impressive, and has been due solely to the effect and influence of the Canal."

In the same paper Mr. Hunter quoted a very remarkable statement by Mr. C. W. Macara, President of the Federation of Master Cotton Spinners' Associations, and ex-President of the Manchester Cotton Association, that "the Canal has, in reduction of the cost of conveyance of raw cotton and of goods manufactured therefrom, been worth at least £500,000 to the cotton trade alone." There is no greater authority on the staple trade of Lancashire than Mr. Macara, and the conclusion at which he arrived is confirmed by Sir Frank Forbes Adam, formerly the President of the Manchester Chamber of Commerce.

I venture to predict even greater results for Glasgow, Greenock, Dumbarton, Leith, and, in a lesser degree, for all ports on the East and West Coast, but especially for Stirling, which would become a distributing centre on this great intercoastal and interoceanic highway.

To sum up from former papers and the opinions of other advocates of this desirable scheme, I contend that the Forth and Clyde Battleship Canal would combine in itself all the

elements essential to the production of national wealth, and its chief advantages may be briefly summed up as follows:—

1. It would add another sea channel, and extend the coast-line through one of the principal industrial centres.

2. It would unite, at the most suitable point, the two seas most frequented by national commerce.

3. It would avoid the loss of life and property inseparable from the north and south routes, and would reduce the strain on the hulls and machinery of vessels, the insurance premiums, the fuel bill, and the loss of time coaling, and induce larger passenger traffic owing to increased safety in travelling and shorter passage.

4. It would reduce by hundreds of miles the distance between all the great shipping ports on the east and west coasts.

5. It would provide extensive harbour accommodation on important trade routes.

6. It would be of inestimable service in the protection of the national trade in the event of war.

7. It would enable men-of-war, ocean-going steamers, and coasting vessels to coal and also oil fuel directly at the source of supply.

8. It would more than double the mobility of our fleet, giving us a power of concentration in the Atlantic or North Sea which would be *denied* to our opponents, and be of inestimable advantage to us in reference to the success of any operation we had taken in hand.

No. 6 alone is amply sufficient grounds for constructing the Canal from national funds. This route could be safeguarded with the maximum of security and the minimum of State expenditure in cruisers. It could be freely used when the Channel and South of Ireland route would be impossible; and for the importation and distribution of Canadian grain, lumber, and wood pulp it would be invaluable.

The Royal Commission will in due course make their final report.

The Prime Minister has stated in the House of Commons that the question will be considered after the report of the Royal Commission is received.

It would, therefore, seem opportune that those who clearly see our supremacy in the North Sea menaced by the growing sea power of our great commercial rival, should put their shoulder to the wheel and try all they can to prove to the

Government that not only our commercial prosperity but our salvation from defeat at sea and consequent invasion may depend upon the speedy construction of this all-important national, self-supporting waterway. There is not a moment to lose. Once let this opportunity slip, and it may be a very long time before we get such another.

I beseech the East Coast ports, the landowners and the towns on or near the route, the City of Glasgow, the Government, the Members of both Houses of Parliament, and the British people of all grades and denominations to take this vital project seriously in hand, and not to let the matter rest until the national construction or guarantee of interest on the capital required for the Mid Scotland Battleship and Ocean-going Steamer Canal has been decided upon.

(During the reading of the paper the Chair was vacated by the Duke of Argyll, and occupied for the remainder of the meeting by Lord Saltoun.)

Commander the Marquis of GRAHAM, C.V.O., R.N.V.R. (Commanding Clyde Division):—As my home is on the route of the proposed canal, and as I am acquainted with nearly every yard of it, I should like to say a few words on the subject of this paper. While I appreciate the trouble which the distinguished Admiral has taken in connection with this scheme and all the hard work he has put into it, I regret—and my regret is very sincere—that I shall have to adopt a critical attitude towards the scheme, if not absolutely to oppose. The Admiral has divided the scheme into two parts. He has dealt with it first of all from the strategical point of view, and then from a commercial point of view. I shall deal with it likewise strategically and commercially. From the strategical point of view of the use of this canal, it seems to me we must assume one of two things: either that on the outbreak of war the enemy's fleet will be in the North Sea and our fleet in the Atlantic; or else we are to assume that our fleet will be in the North Sea and the enemy's fleet in the Atlantic. It seems to me inconceivable that when our international relations become strained we should find our fleet on one side of Great Britain and the enemy's fleet on the other, and for this reason. Why should our fleet ever be in the Atlantic? Our fleets go to the Atlantic for short periods of manœuvres, but when they are there they are away from their coaling places, and their dockyards. The Atlantic, moreover, is of all places in the world the most impossible one for submarine boats and small torpedo craft to work. Therefore it is not really conceivable that on the outbreak of war our fleet will be found in the Atlantic. Again, if our fleet is in the Atlantic it is away from the coastline of any possible enemy. It is therefore away from what is called the frontier of England, for remember it has been laid down on the highest authority that the coastline of a foreign country is the frontier of England, and for that reason from the strategical point of view I do not consider this canal will be of importance. Secondly, I presume this canal is going to be defended, but I cannot see in the paper any provision for defence or the cost of defence. It will, I presume, not only have to be defended at both its entrances, but it will also have to be defended in some kind of manner along its entire route. A most distinguished authority on ordnance laid it down the other day that it would be possible for an aerial vessel in the future to carry a ton or two tons of high explosives. If that is the case, and an aerial vessel was to come

across the route of the canal and drop explosives down on any vital point of the canal, or on a ship in it, it would block the waterway and render it useless. I consider the cost of defence, therefore, must be provided for and added to the cost of the canal. Then, again, I see the gallant Admiral states that at one part of the canal there would be repairing basins out of range of gun fire—in Loch Lomond and round about Stirling, but the cost of those repairing basins has not been mentioned. If you are not going to include the defence of the canal or repairing basins, you lose half the advantage of the canal, if it ever had any advantage. Now let us look at it from a commercial point of view. We have been told the cost is to be £20,000,000. A little later on, at the end of the paper, we are informed that the Government will be expected to guarantee a large sum of money, about £4,000,000 per annum for four years—that is £16,000,000; in other words, £36,000,000 has to be found to carry out this canal. Then the rate of interest is taken at 3 per cent., which, from a commercial point of view, is too low. It is lower than the rate of interest on any portion of the Manchester Canal Stock. The Admiral's comparison, again, of the value of other canals was rather unfortunate. He mentioned one in France, on which they are going to spend a prodigious sum of money. That canal is not completed, and therefore the evidence adduced is of no use with regard to the success of this one. Then the gallant Admiral quoted the Corinth Ship Canal in Greece—this canal was put up for sale on the market recently as a bad concern. With regard to the Panama Canal, the circumstances connected with it are wholly different from those connected with this canal. To circumnavigate Cape Horn and Southern America is very different from circumnavigating the North of Scotland, and places the comparison between those two canals out of court altogether. The mentioning of the Manchester Ship Canal was very unfortunate indeed. We are told in the paper that £17,000,000 of capital has been spent upon it; as a matter of fact the capital of that canal is quoted as being 10½ millions. If, therefore, the Admiral is correct in saying they have spent 17 millions, they have spent 6½ more millions than the amount of the original estimated capital expenditure. Although we were given figures showing the increasing annual value of the total canal returns, you must remember that those increasing returns have only just been sufficient to pay debenture interest, and that for more than ten years they have not paid a single dividend. Sir Charles Campbell was again very unfortunate in the commercial centres he quoted in favour of this canal. He has given us a list of towns which support the scheme. Among them he has quoted Portree. If that is Portree in the Isle of Skye it has only 800 inhabitants—it is a mere village. Again, he quoted Port Ellen. If that is the Port Ellen in the Island of Islay that also only has about 800 inhabitants. It is surely absurd to quote two villages as commercial centres of any significance in favour of this canal. I observe also that Greenock is quoted as supporting the scheme; but if you look at Greenock's reply you will find it is very qualified; it even doubts the commercial soundness of the canal. It says it approves of this canal as forming a part of the scheme of national defence, especially with reference to the passing of H.M. ships from Rosyth Naval Base to the shipbuilding yards on the Clyde and also H.M. Torpedo Works at present under construction at Greenock. I know the torpedo factory was put at Greenock because it was close to the range at Loch Long. Loch Long was selected as a torpedo range because of its absolute clearness of shipping; but if you go and make this canal and make Loch Long full of shipping, it will do away with the torpedo range,

and that will do away with the torpedo factory. I think I know quite enough of the Greenock Harbour Trustees to say that, had they been told that, they would never have supported the scheme. As to the suggestion of carrying out the scheme for the sake of the unemployed, we all know there is no labour in this country so unremunerative as unemployed labour. We all know that in Glasgow the work given to the unemployed is, at Palace Rigg, a scandal, and a waste of public money. In London we have spent thousands of pounds on unemployed labour, and only recently the Council valuer valued the work done in the public parks by the unemployed during the past winter at £7,000, whereas the public expenditure upon it was £59,000, that is eight times the value of the work done. Yet we are recommended to push this scheme for the sake of giving employment to thousands of unemployed at a cost of £2,000,000 a year! With regard to the increase in the value of the land along the route of the canal, this I consider to be an appeal to win over the support of the landlords in the district. There never was a more unfortunate moment to seek to gain the approval of the landlords on the question of the possible increment in land values. We know well enough that if the land was to increase in value because of the advent of the canal it would be unearned increment, and I should like to know how many landlords on that route can look forward to unearned increment at the present political juncture. There is only one more point to which I wish to allude, and that deals with the question of sentiment. You must remember that this canal would go through the most historical part of Scotland. Loch Lomond and the Stirling district are localities to which thousands of people come every year from all over the world for the purpose of seeing the many historical places; but if we are going to have a canal, with German liners puffing smoke at every point and whistling at the various bends and bridges, that must do away with all the beauties and historical associations of the district. I venture to say that not only would the district be ruined by the ugly sight of this canal, but the whole of Scotland would be the poorer; and I am therefore sorry I am unable to support the Lecturer.

Mr. A. R. Rainy, M.P.:—I listened with a good deal of attention to the speech which we have just heard. It occurred to me, however, that there was a search for reasons against this scheme rather than a judicial consideration of the whole proposition. I may be mistaken, but it did appear to me that this was a violent attack, for reasons not mentioned, upon a particular scheme which has been laid before the country for consideration, and, therefore, if the Marquis of Graham will excuse me, I think his speech was scarcely judicial. Now let us just examine one or two of the things that were said. His lordship began by telling us that it was no advantage to have an outlet to the Atlantic because our fleets ought never to be there. That is the most extraordinary assumption I ever heard anybody make. I do not pretend to be a naval expert, but I think that I shall carry you with me, and possibly naval experts, when I say that the mobility of the fleet from one part of the sea to another is a most important factor. Therefore, simply to say your fleet ought not to be in the Atlantic is surely a proposition which cannot at once command universal consent. Suppose war between us and Germany, and we block the Channel, would not the German fleet, to attack our commerce, be compelled to go round by the Atlantic? I will say no more about that. Then Lord Graham talked about defence and the cost of the defence; but surely he knows that the defence for both ends of the canal is already assured. We are building a naval base at Rosyth. Is

that going to be left undefended? We have all our great trade route to Glasgow; that is defended. Therefore, unless the enemy are to come in these marvellous flying machines with two tons of explosives, which is not within practical politics in the air, so far as I know, the defence is already assured. If a great engagement takes place in the North Sea or the Atlantic, it surely must be a very important thing that we should have a quiet place, unattackable, where the ships can be laid up and repaired. His lordship made another most extraordinary statement: that the total cost of this canal was going to be thirty-six millions. I want to assure him that, as a matter of fact, the total cost of this canal will be only twenty millions and no more. The interest on that amount at 3 per cent., is £600,000 a year, and therefore this scare with regard to double the cost is simply not correct as a statement of financial fact. With regard to the power of raising this money, I am prepared to state here that if the Government guarantee is given, the money will be subscribed to-morrow, and that is really the pertinent answer to the doubts cast upon the power of this proceeding going forward, because of the great risk and danger which is involved in the scheme. Then I would like to refer to his speech at another point. His lordship has referred to Portree and some other small places; but it must be remembered that some of these small villages, where few people live, are the headquarters of the fishing trade. Here the people, for instance, are very anxious to get their herrings as quickly as possible to different parts of the North Sea, the Baltic, and so on, and they suffer at the present moment because they cannot get their fish away. They are tied down by expensive railway freights and so on. It may not be a very serious sum, but every little helps, and every little ought to be considered when you are looking at a big scheme like this. If I may depart a little from Lord Graham's speech, I would like to say one or two words on the general question. I have been talking to some of the people in Glasgow, Greenock, and other places, and what I find is this:—There is a certain suspicion that if you make new trade routes from sea to sea, some of the trade will pass you by, and you will be therefore left stranded. What I think can be proved by statistics is that the general increase in the volume of trade always tends to benefit the places near which the trade passes. You are not to suppose that because a certain amount is deflected you are going to be left out in the cold. May I put it in this way? The number of tramways, omnibuses and underground railways has immensely enlarged the amount of travelling that is done by people who now no longer walk. The tramways, omnibuses and underground railways each thought they were going to be ruined by the other; but the immensely increasing volume of trade goes on and on, so that we do not know the end of it. Therefore you will find that, although people may look askance at it for the moment, because they are afraid they may be left high and dry, the real increase in the volume of trade is bound to help in the end even those who do not see that they are at present benefited. Lord Graham said: Why should not the canal go down through Dumbarton? The great thing, from the fleet point of view, is that you must go through in a hurry, and if you get into a narrow channel with all the traffic that is going on there, you will get jammed up at once. You would find that the whole traffic of Glasgow would be congested if you opened the canal down there at Dumbarton. There is one other point I should like to make before I sit down. It has been my good fortune, like the Duke of Argyll, to know the engineers of this scheme all my life. We were all at the same school—I believe in my old school. They were called in

without any other idea except that of devising the best means of making the canal from the one side of Scotland to the other, and they have entertained every possible suggestion. I have had the good fortune to look at the plans, specifications and so on, and the amount of thought, energy and enterprise that is displayed in them is somewhat remarkable. It is a thoroughly solid and worked-out scheme, and therefore ought to have at least the fairest consideration. It is a scheme which has been thought out from the top to the bottom with a view to providing the best accommodation at the smallest price, which is a thing you do not always get in the new ventures which are put before the public. I want to say, in conclusion, also, that here is a work which, from its inception, has been looked upon not principally as a money-making affair. It has been looked on as a scheme which might benefit Scotland, England, Ireland and the Empire, which would be carried through at a reasonable cost, but which should have a beneficence far beyond the immediate profits of any company-mongering proposal. Therefore, upon those grounds, I think this meeting ought to give the scheme at least its provisional support, and I think it might well do so.

Mr. L. GRAHAM H. HORTON-SMITH, F.S.A. Scot.:—I have listened with the greatest interest this afternoon, both to the paper of the gallant Admiral and also to the speeches of the Marquis of Graham and Mr. Rainy who followed him, and I hope that I may be pardoned if I venture to draw your attention to some aspects of the question which would hardly yet appear to have received the attention which, in my judgment, they so eminently deserve. As a rule, when one has but a few minutes in which to address an audience, the speaker's line must generally be to say that which he came to say rather than to waste the time of his audience, if indeed it could be called waste, in criticising or expressing his agreement with those who have preceded him. But I should like, if I may, to say a few words in regard to Lord Graham's observations as to the position at different times of the British fleets. I find that in August, 1907 (to give but a single illustration), the Channel Fleet was at Liverpool, on the west coast of this country, and that, too, at a time when (as shown by "Carausius" in the *United Service Magazine* for November, 1907) the Nore Division of the Home Fleet was certainly not in condition to bear the brunt of a hostile attack upon our eastern shores. So that it is quite clear that there are, or may be, times when a canal from west to east of this Island may not be merely of importance, but actually of vital service to the country, and, indeed, may even be the means of saving the country in the hour of war. Lord Graham referred again to the question of cost. Of course the question of cost may be important, but it is not the point of view from which I think the Government, strictly speaking, if actuated solely by the desire to preserve this Empire, should regard the matter. Either the canal is strategically a good one for this Empire to have, or it is not. If it is not, I for one care nothing about it; and again, if it is not, the Imperial Maritime League, which I represent, might not unanimously have passed a resolution in favour of it. One point only in regard to the canal, as originally proposed by the Admiral, did the League reserve. It was this: that the canal, in order adequately to safeguard our interests, ought to have, as one of the photographs shows it now is to have, a secondary exit into the Firth of Forth by means of a cutting to be made from the West of Rosyth (across the projecting promontory) to the Firth of Forth on the east, of such nature that in the event of the Forth bridge being

blown up, and access to the sea on the east being thereby interrupted, the ships at Rosyth might yet be enabled to obtain access through the Firth of Forth to the North Sea. Another point of vast importance, which has not, I think, been touched upon to-day, is that the canal would enable the Clyde docks to be of more immediately effective service in time of war in the case of ships crippled on the East Coast. Certain canals have been referred to this afternoon. Certain have not. It is with the latter, in the main, that I propose to deal. The Panama Canal has been mentioned. That canal has been calculated by eminent authorities to be likely to double the striking force of the American fleet in the event of war. Lord Graham drew a distinction between that canal and this proposed canal. There is, I quite agree with him, a very important difference; but I do not think that it is a vital difference. The wars of to-day are, and will be, wars ever narrowing in time, ever shorter in their duration. It has been estimated that the next naval war with this country will not last more than seven days. If our ships do happen to be on the west coast of Scotland or on the west coast of England, when that war commences, it will take them about three days to get round to the east coast, and they will, or may, then probably be too late. Therefore, although the Panama Canal differs from this canal, in that on the one hand you have a voyage of some 14,000 miles to get from west to east or east to west, and in this case a much shorter voyage, nevertheless the distinction is not so great, I submit, as it might at first sight appear to be. Perhaps you will now be so kind as to focus your gaze for a moment on the map showing the East Frisian Islands, though I should like to preface my remarks in that connection by saying that even the admirable map which is exhibited on the wall does not show you the full extent of the naval advantages now possessed by Germany in regard to the North Sea. You will see Brunsbüttel at the western end of the Kiel Canal; at that place they are now projecting, if, indeed, they have not already commenced, two Dreadnought docks. If you will carry your eye along the hundred miles of coast from Brunsbüttel to the Island of Borkum (the most westerly of the East Frisian Islands), you will see a coastline big with fate for the British Empire, if we do not make full provision in the near future to meet the ever-increasing danger thence arising. If you carry your eye west from Brunsbüttel, you will arrive at Cuxhaven—a German naval base and very strongly fortified; and at the western extreme of these 100 miles you will notice the mouth of the Ems, on which Emden stands, and between the two, looking again from east to west, you will notice also Bremerhaven and Wilhelmshaven. At Wilhelmshaven to-day there are three *Dreadnought* docks ready, and at Bremerhaven another; while we have not a single dock on our east coast capable of taking a crippled *Dreadnought*. At Emden (which is only 278 miles distant from Hull) they are making a first-class torpedo base; and, further, enormous wharves have there been built for the rapid embarkation of troops; and every other possible method is being utilised also for making Emden a port of first-class importance to the German Empire. It has the additional merit of being a free port. Now let us see what the Germans have done by way of canalisation to increase their strength upon this coastline. Years ago there was a canal built between Emden and a place called Aurich, about half-way between Emden and Wilhelmshaven. Later on an additional canal was built connecting Aurich with Wilhelmshaven itself. That additional canal was completed in 1886. Last year they widened the entire canal from Emden to Wilhelmshaven—it is now known as the Ems-Jade Canal—so as to allow of the passage of the largest class of

destroyers; and they propose to carry that scheme of canalisation yet further by at once building a canal across the piece of land which at present separates the Jade Bay (upon which Wilhelmshaven stands) from the estuary of the Weser (on which stands Bremerhaven), and so link up Wilhelmshaven with Bremerhaven. If Count von Reventlow's scheme is carried out, the Ems-Jade Canal itself will later be converted into one capable of taking battleships; but for the moment, happily, that scheme is in abeyance. But the extent of their canalisation does not end with what I have at present mentioned. They have, in addition, a canal known as the Ems-Dortmund Canal, completed in 1899, which, starting from Emden (where it meets the Ems-Jade Canal), joins the Ems at Oldersum, a few miles away, and, separating again from the Ems at Meppen, goes right down to the Westphalian coal measures (a very important matter), and links up further the important works of Messrs. Krupp at Essen—those works, the great extension of which (with the consequent acceleration of German naval construction), for so long remained either unknown to, or unaccountably unheeded by, our Admiralty. Reverting to the Ems-Jade Canal, you will see that if this canal will enable torpedo craft of the largest type to go from Emden on the one side to Wilhelmshaven on the other, and *vice versâ*, there are, to say the least of it, two exits which will have to be blockaded along this particular coastline, apart from the exit by the Kiel Canal. Lord Graham is quite right in saying that the frontier of the British Empire in the hour of war always has been, and, if the Empire is to stand, must be, "the enemy's coast." I would like to ask you, however, to bear with me one moment more while I tell you something about "the enemy's coast" when we are considering German strength and German facilities on the North Sea to-day. In the old days, when we formulated that doctrine, there was only one exit from the Baltic for Germany, and it was nowhere near Emden, Wilhelmshaven, Bremerhaven, Cuxhaven, or Brunsbüttel. It was right away to the North of Denmark, by the Skager Rak. If our fleet was massed there, and was in a sufficient superiority, which was held to mean a superiority of five to three, presumably we should have smashed the German or any other fleet which might have endeavoured to force a passage through. Now, however, the Germans have the second exit by the Kiel Canal, and further, as I have said, they now have these additional exits (to which I have referred) at Emden and Wilhelmshaven. There is, moreover, a further difficulty when we are considering how we can make this German coastline our frontier. For this reason. This particular part of the world—the particular 100 miles which I have mentioned—has, from the time of Pliny onwards, been subject to the most extraordinary vagaries of Nature. The sands have silted up in some places; in other places the opposite operation has taken place, and the net result is that this coastline, in addition to being protected on the North, for the larger part of its extent, by the East Frisian Islands, is protected yet further by mudbanks and sandbanks extending a great distance from high water mark into the sea to the North. Indeed, in order to understand the nature of this coast a naval chart needs to be consulted rather than a map. Really, the coastline of the German frontier there, is from four to six miles out to sea, and without the most experienced pilot it would admittedly be highly dangerous for a modern warship to approach this German coastline. Consequently the British fleet would have to stand out to sea about six miles north of these islands, and would be unable to see what was going on behind—that is, to the south of those islands. First of all it might not be possible to tell whether the German ships were at Emden or Wilhelmshaven, or

some at one and some at the other, and secondly, even if that were known, it might still not be possible to say (owing to the facilities already accorded to destroyers, and later to be accorded to battleships, by the Ems-Jade Canal) from which of the two they might eventually decide to issue in force. Notice, again, to the east, the mouth of the Elbe. The real entrance to the Elbe (on which, of course, Brunsbüttel stands) lies nowhere near the shore, but four miles to the north of Cuxhaven.

The CHAIRMAN:—I do not want to interrupt this most interesting speech, but I think it is rather leaving the point. We are discussing to-day the other canal. I quite realise that the speaker is referring to the strategic point, but I do not think we require to go into all this detail, although it is most interesting, and I should very much like to listen to it.

Mr. HORTON-SMITH:—I have very nearly come to the conclusion of the remarks which I desired to make. May I only just add that the difficulties which would be experienced by a British fleet in the endeavour to blockade the series of exits to which I have referred appear to me to have been immeasurably increased by the cession of Heligoland to Germany. The reason I have gone into these details is this—and I am sure Lord Saltoun will pardon me for saying so—that upon the last occasion, when I went into these matters (at a meeting held in this hall on 17th March last), I was told afterwards by several gentlemen amongst the audience that they regarded them as of the utmost value to the discussion, both as showing the enormous strength which Germany has upon this fateful coastline, and also because they held (as I hold) that this fact alone enormously increases the importance of the point under consideration to-day, namely: Is the Forth and Clyde Canal strategically necessary or not? That was the point to which I was leading up. The greater the strength you can see that Germany has on the North Sea coastline, to which I have referred, the greater the necessity for increasing every possible strategical advantage for ourselves in that Sea. Speaking for myself, I cannot but hold the view that the proposed canal would enormously and in every way increase the striking force of the British Navy in time of war. I think I really need not add anything further. I am sorry if it could be thought that I have in a sense left the Forth and Clyde Canal, by transporting you in imagination to the German coast. But the reason I have done it is this, that unless you bear in mind what has already been, and what is even now being effected, upon the German coast, with reference not only to its particular land-features, but also with reference to the material power of Germany on that coast, you will never get the British public as a whole to appreciate—although, possibly, educated people might—the necessity for the construction of the Forth and Clyde Canal.

Major W. L. FORBES (late Royal Fusiliers):—There is one point referred to by the last speaker with regard to Germany that I should like to call attention to. All his arguments were in favour of the strategical value of the canal. But Emden, the place he mentioned, is most important to my mind as bearing on the value of this Mid-Scotland canal from a commercial point of view. As the speaker said, Emden has been connected by a large canal with the Rhine, and the result is that a ship can now practically go from Emden to the Black Sea. It is hoped by many Germans that the trade of the Rhine will thus be kept in German territory until it passes out at Emden, without going through Holland at all. The

Mouth of the Forth lies almost in the direct line of the great timber trade of the Baltic, and this timber and the Canadian trade of Hamburg, as well as that of the great port of the future at Emden, should eventually go by the direct route through Scotland. I was very much struck with the remarks of the noble Marquis, who seemed to be so much opposed to the canal. After the very lucid explanation that has been given us by the gallant lecturer, I hardly see how a great many of his lordship's remarks can be borne out by fact. The Kiel Canal was made, at what was considered a great cost, to serve very much the same purpose as the lecturer now advocates on behalf of our Navy—to double the value of the fighting ships of Germany. The result of the Kiel Canal has been so important a factor in regard to the canalisation of the German Empire at the present moment that our northern neighbours have not only, roughly speaking, more than doubled the length of the great canals of the Empire, but they are now pushing forward great canals which will carry ocean-going ships into the remotest parts of Germany. That does not look as if the canals of Germany were not a success. We also know what the canal system has done for France. There are canals all over France, with railways and good roads alongside them. Anybody who travels through that country, particularly anyone who goes down to the South of France, cannot fail to see the beneficial results of these canals on the industries of the country. And it is the same in other countries. Look, for instance, at the Panama Canal. A few years ago it was said it could not be made, but the Panama Canal is going to be made. It is not a question of a few millions of money. I think the last calculation of the cost was 250,000,000 dollars; but even if the Panama Canal costs 500,000,000 dollars the American nation is behind it, and the construction is assured. Ample arrangements for its defence are being provided, and it is equally certain that our own naval and military authorities are perfectly well able to provide for the defence of the ingress or egress of the proposed Scottish canal. Another point that I think might be worth notice, because it was not very much enlarged on by the lecturer, is the length of the canal. It is only sixty-five miles long, whereas if a ship has to come round by sea from Edinburgh to Glasgow, the distance is either 500 or 900 miles. There is thus an immense difference between the length of journey a vessel would have to make in working through the proposed canal and going round by sea. Another point which Lord Graham advanced was that it was hardly worth while to quote the opinion of a small town like Portree. But the lecturer has quoted communities situated as widely apart as Glasgow and Dundee, and has told us that both these towns are in favour of the scheme. There is yet another point I should like to mention with regard to the present canal. Many people think that as there is already a barge canal it might be enlarged. But the present canal runs through a congested and very busy district; all kinds of works and industries have grown up alongside it, and there would be great difficulty in constructing a canal on that route which would comply with the conditions of the Admiralty, who require that the canal shall have a depth of 36 feet. The line, as advocated by the lecturer, runs, roughly speaking, through what I should call a flat country, and it appears to me that the construction of the canal should be a very simple task. At the same time, however, the configuration of the country on the northern side lends itself very much to the easy construction of bridges to carry the great railways over the canal, so that there will be no congestion and no delay caused to the railway systems which may have to cross the route. Lastly, allusion has been made to the fact that the proposed canal would pass through and destroy the amenities of

a historic and beautiful part of Scotland; but almost at the heart of the country, through which it is proposed to take the canal, is the town of Stirling, and we are told that that town advocates the scheme.

T. MILLER MAGUIRE, M.A., LL.D. (Barrister-at-Law, Inner Temple):—My speech has almost been taken out of my mouth by the disappearance of the map. I should not have spoken to-day but for the remarks of the gallant Marquis. The difficulty with regard to the matter is that his remarks might be applied to every canal under every circumstance, especially to great canals, which have strategic as well as commercial objects. One of his lordship's arguments was that the canal could be destroyed in a few minutes by aerial monsters. That does not frighten me in the smallest degree. A nation that can go under the sea in submarines can, if it pleases, work in the air equally well. In all such enterprises there is risk, and also retaliation is possible. Supposing our canal is going to be destroyed in a few moments by these aerial monsters, why should not the Suez Canal be destroyed in the same way? Why should not the Kiel Canal even be destroyed? Why should not the Panama Canal, if it is ever constructed, be destroyed? This argument applies equally to the destruction of every canal and of every great railway bridge, Forth, Tay, or other. The noble Marquis's argument about the beauties of Nature appealed to me, especially as I am told that there is only one fog off the Irish coast for ten fogs off the English coast. I was glad to hear of it. But surely you are not going to put the beauties of Nature against the permanence of the Empire! The same argument applies with regard to many enterprises. It was said with regard to the railways that they would destroy parks and obliterate all the beauties of Nature, and motors are the horror of all pedestrians on our beautiful country roads. But supposing we had listened to such an argument, where would the commerce of England be? If this island be the workshop of the world, and one of the greatest centres of its industrial enterprise be Glasgow, you have only to use your eyes to see at once that the proposed canal, especially at a time when the canal movement is daily growing in importance and when water transit is ten times cheaper than rail transit, would be of the greatest service to this island. Remember that other countries have many canals, one of which is one thousand miles long, and which was finished in the year 1889. The Chinese constructed magnificent canals many centuries ago. If these undertakings can be successes by other nations, why should not the British succeed? They ought to be in front and not behind. Apparently we are behind in military enterprise, in educational ability, and scientific invention, and now when the great world-wide importance of inland navigation is beginning to be realised, we are to be afraid of that too! Why should we not lead instead of lagging behind? The gallant Admiral said the canal would cost 20 millions, and the Marquis of Graham said it would cost 36 millions. But remember that we spent one thousand millions in strategy against the French in twenty-two years, 1793 to 1815. With regard to the ease whereby the people of our island can construct enormous works like the proposed canal, bear in mind also that we spend twenty millions a year on a contemptuous and odious game called golf, where people knock balls about for no useful object and in pure selfishness, and we spend, according to Lord Willoughby de Broke, in his most sarcastic and contemptuous article on "Sport" in the *National Review*, ten millions of pounds on hunters, and ten millions of pounds on hunting. We also spend ten millions on motors and about five millions on football, and similar spectacular so-called "sport"—altogether about sixty millions a

year, most of it in tomfoolery, and yet we cannot absolutely spend a million a year, if not less, which will be the interest on this canal—I am now told it is £600,000 a year. Yet we can spend twenty millions a year on golf. I have done with that argument. We are not children—we are men. We must not lose our Island—our Empire—for such considerations. I would like to point out the *vis vitæ* of the British Empire. The soul of the British Empire is the United Kingdom, but that map does not at all represent the truth of the situation. I am always sorry when I see a mere map of the United Kingdom at these lectures without a map of the world. There ought to be a permanent map in nearly every public building in England and the Empire about the size of the wall. The whole question with regard to these Islands, according to Sironi, and every strategic geographer who goes to the root of the matter, is their relation to the whole traffic of the world, to international strategy. We may be at war—I am not speaking of Germany only, I have the greatest possible admiration for Germany; I wish we had half the brains of the German people, and half their capacity for using them. We may be at war with other States besides Germany. Ten years ago we were thinking of fighting France, and we might have to fight the United States—we have fought them before. Now consider the enormous value of the great Scotch canal under any of these circumstances.

The CHAIRMAN:—I think you are a little diffuse; you are getting away from the point of the paper.

T. MILLER MAGUIRE:—The point which I want to emphasise is that the position of these Islands is decisive of the value of the canal—as to the German Ocean and the Atlantic, and as to every possible passage from the Atlantic, round the top of our Islands, or from the Baltic, north or south. Anything that facilitates connection between the disjointed sections of our own naval forces, or is on the flank of any adverse movement, as that canal must be, is worth not merely £600,000 a year but £1,600,000 a year. I cannot agree therefore with any of the remarks of the noble Marquis, at which indeed I am surprised, inasmuch as I believe it would be a financial boon to Scotland and not detract in the least from the attractions of the charming district, from the Trossachs to Loch Lomond. I venture, then, to give the heartiest support to the views of the lecturer. The canal system of our Isles, both in Great Britain and Scotland, has been too long ignored and overshadowed by railways. The future of commerce may be with canals!

Lieut.-Colonel A. D. SETON (late Fife Royal Field Reserve Artillery):—I only rise for the purpose of asking the gallant Admiral to be good enough in his reply to give me a little information with regard to Loch Long. I know Loch Long pretty well, and it appears to me that to make it effective as an entrance to the canal it would be necessary to do a good deal of dredging there. Nothing has been mentioned about that, nor anything in the way of cost in connection with it. The Loch, as you can see from the map, is extremely narrow, and as far as I know the deep water channel is even narrower; and therefore it appears to me a considerable amount of dredging would have to be done. I would also like to know what kind of arrangement would be made for the entrance to the canal at the Arrachar end, because there is already very little room there? The captains of the steamboats will tell you it is extremely difficult to get alongside the pier at Arrachar if there is a strong wind blowing,

and there is a lot of shallow water there, so that it would require a good deal of dredging to make it suitable for the purposes proposed. Personally, I am entirely in favour of the canal, and I am very glad to find the scheme has gone so far as it has. There is one point I could not understand quite clearly, but I have no doubt the Lecturer will answer it. I know my countrymen pretty well, and I wish to tell him and those who are associated with him, that there must not be any uncertainty with regard to anything connected with the canal. There does seem to be a little uncertainty as to whether it will be the Tarbet and Arrachar cut out of Loch Lomond, or whether it will be through Dumbarton. I understand there are great physical difficulties with regard to the Dumbarton route, apart from the narrowness of the Clyde at Dumbarton; but in the very pretty picture which was exhibited, the Tarbet and Arrachar cut was not shown at all; the canal was shown as going through Balloch, which perhaps was the early scheme. I think that should be corrected, otherwise my careful countrymen will say: "We will wait until it is a little more settled before we go in for it." I only add that little piece of friendly advice—do not leave anything to chance in a matter of this sort.

Mr. STEVENSON:—I should like, in reply to Colonel Seton, to say that in Loch Lomond there is ample depth of water at present for any ironclad—there is between 50 and 100 fathoms depth, so that there is no need for any dredging.

Colonel SETON:—I know there is a lot of water in the centre.

Mr. STEVENSON:—It is amply wide enough for as many ironclads as you like.[1]

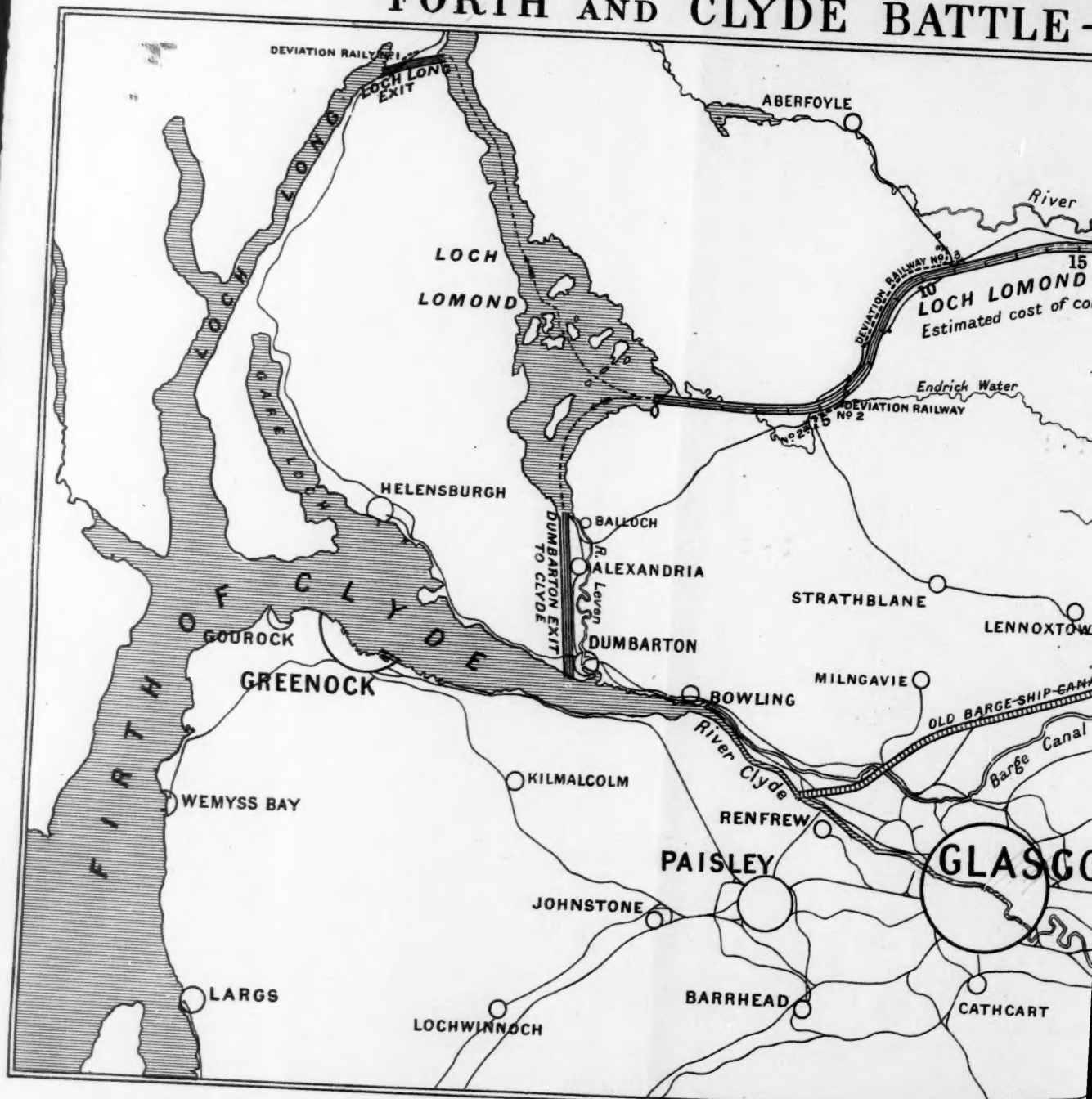
Colonel E. ST. C. PEMBERTON, R.E.:—I think that if the canal justifies its construction on strategic grounds there remains very little further to be said, considering the political position of Europe at the present moment. Whether the canal will cost 20 millions, 30 millions or 40 millions, is to my mind quite immaterial. We are a wealthy country, and if the canal is necessary for the safety of the Empire, why for heaven's sake let us construct it at all costs. The Marquis of Graham raised a point as to whether it would not be futile to imagine that when this country was being menaced or on the outbreak of war, our ships could be in the wrong place. I can imagine many unfavourable circumstances that might arise which would tend to leave ships in the wrong place at that critical time, and therefore I say that if the construction of this canal would tend to leave nothing to chance, let it be constructed. I will give you an example, if I may mention it, in the Russo-Japanese War. At the outbreak of war one-half of the Russian fleet was at Vladivostock and part at Port Arthur, two naval bases separated by hundreds of miles. The whole result of that war might indirectly be attributed to the fact that the Russian fleet was not concentrated at one spot, either

[1] Either Mr. Stevenson misunderstood what I said, or is wrongly reported. I never questioned the depth of water in Loch *Lomond*, but did, and do, doubt if there is a channel of sufficient depth near the head of Loch Long to admit of two heavy ships passing one another. My ear did not detect at the meeting that Mr. Stevenson said Loch *Lomond* instead of Loch *Long*.—A. D. SETON.

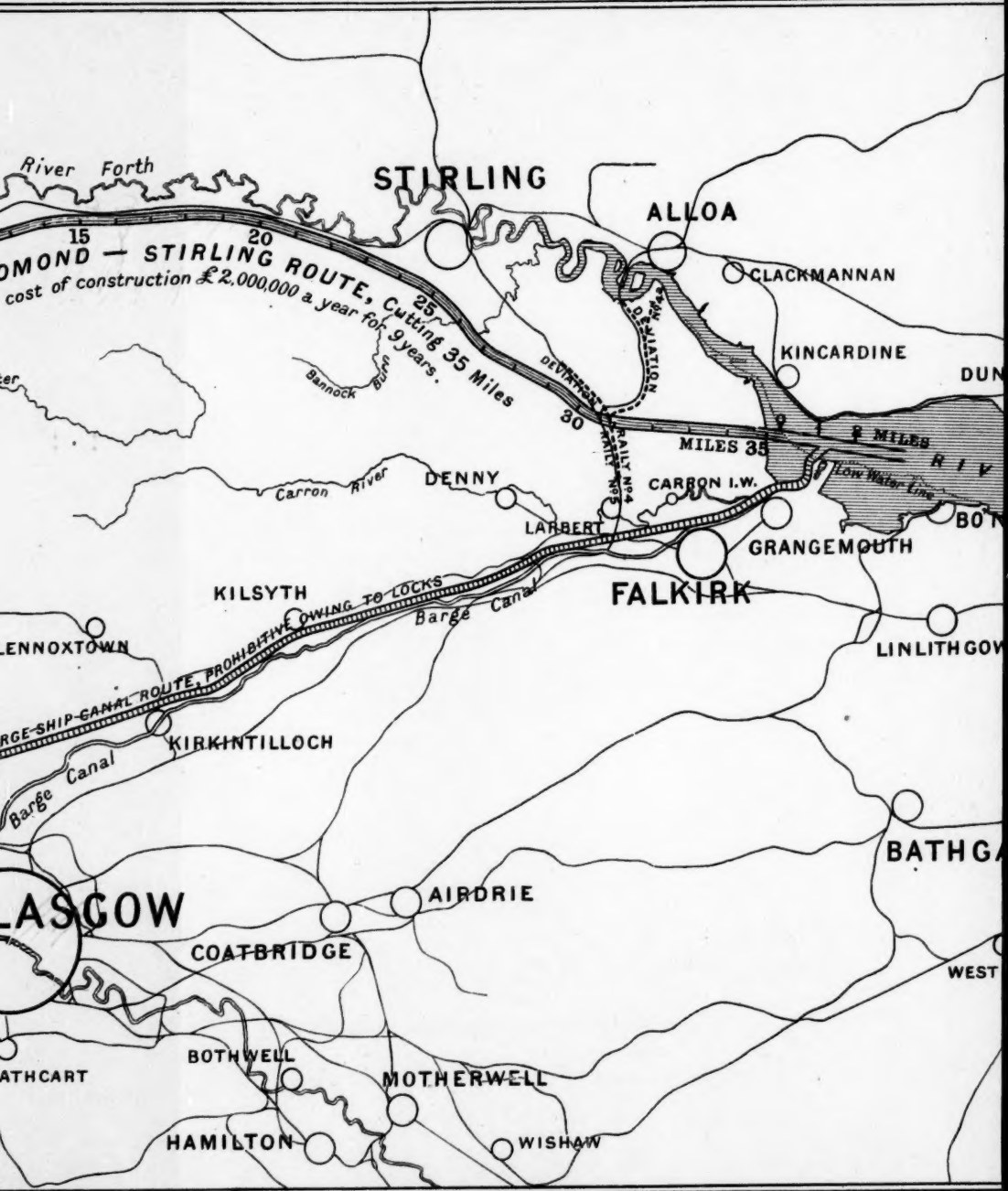
Vladivostock or Port Arthur, or elsewhere, at the outbreak of the war. It is difficult to say to what causes the Russian defeat can be attributed, but that was certainly one cause. What I imagine might be the condition of things is that ships would not be brought into the North Sea because the Cabinet would be afraid of doing anything which might provoke hostilities. That is a real danger. I know it has been repeated over and over again that it is a wrong thing to say, but it is no less real, and it is more real now in these democratic times than it has ever been before. I do not think the Cabinet will put the ships where they should be for fear of giving offence. On many occasions the forces of this Empire have not been in the right place at the right time. At the time of the South African War were there sufficient forces in South Africa? No, because it was said it would bring on war; and in the same way the same argument will be used with regard to the North Sea.

Vice-Admiral Sir CHARLES CAMPBELL, in reply, said:—So very little has been said in opposition to the proposed strategical and commercial waterway, nearly everybody having spoken in favour of it, that I shall not have to detain you very long in my reply. I have to thank one speaker, however, for the remarks which he made about the canal, and that is the Marquis of Graham. I am really deeply indebted to him for what he said. He mentioned one point which I quite expected to hear to-day, that the locks might be attacked by airships. I am quite willing to grant that airships might injure the locks, if means are not taken to safeguard them; but the same may be said of all railways, docks, ships, etc. We shall have gates on Loch Lomond at entrance and exit, to minimise risk, and if the locks are open to be attacked by airships they must be defended by airships, and even if the airship attack were successful, the canal would have done good in the first place before that. While I am speaking on that point, I should like to say that I happen to be on the Committee of the Aero Club, and I do not suppose that we in this country are going to be so supine as to do nothing with regard to aerial navigation. We shall have an aerial defence if the national interests require it. If there is a lock there, and you expect it to be attacked by airships, of course you will put an airship on duty there—there is not the slightest difficulty about it. The sources of attack can, and must be, met as they occur, and therefore I may fairly claim that that particular criticism of his lordship is not successful. Then reference was made to the Panama Canal and the special difficulties connected with its construction. In the other canals which have been made, special difficulties have had to be overcome, and enormous sums of money have been expended on them. Why? Because the Governments of those countries believed that it was essential that the canals should be made; and if we can only persuade our Government that it is essential, as I believe it to be, that this canal should be made, there is no reason why we should not run the risk of spending a paltry sum of four million pounds, that being the extent of the national risk in making the canal. The canal would not do away with the necessity for the torpedo factory on the proposed site. In fact, it is an additional reason for it. You can protect the canal and render the range available for either coast. Nothing but an airship could get up to touch the locks, because there is the whole of Loch Long to be traversed, and how are they going to get up that space? You can have the lock a few hundred yards up the canal, and perhaps round the corner if necessary, and make the curve there. There is no reason why you should not do that. Then another question was asked, which I thought was covered by the clear

FORTH AND CLYDE BATTLE-



LE-SHIP AND OCEAN-GOING STEAM



OCEAN-GOING STEAM



EAMER CANAL.



Stanford's Geographical Estabt, London.

MAP
SHOWING COMMERCIAL ADVANTAGES OF THE
FORTH & CLYDE CANAL

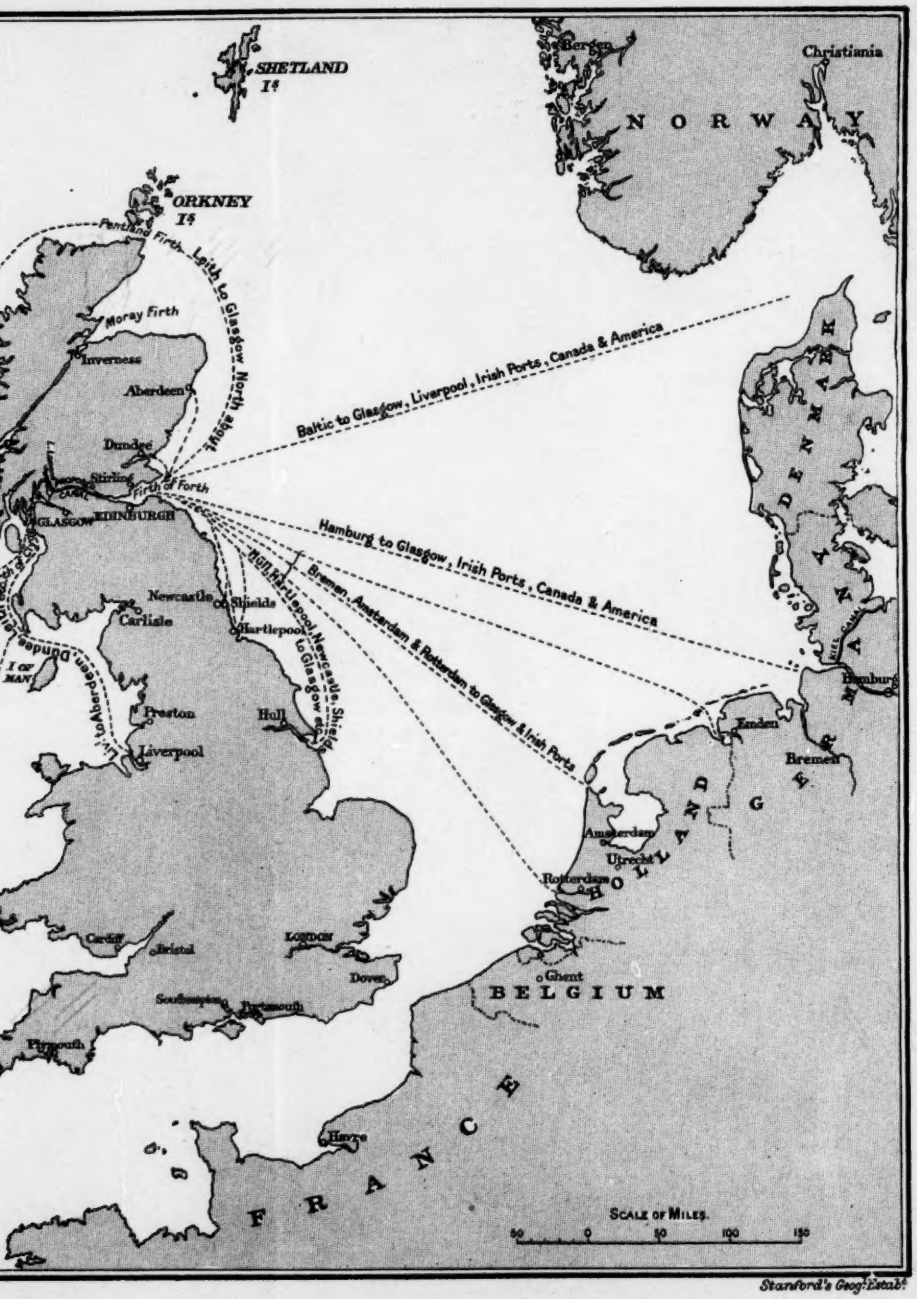
Forth & Clyde Canal National Association
26 SHAFTESBURY AVENUE
LONDON.

	Miles
From GLASGOW to EDINBURGH *via* North,	500
" " South,	900
BY CANAL, - - - - - - -	65

DISTANCES SAVED.

	Miles		Miles
London to Belfast -	100	Aberdeen to Glasgow -	341
" Glasgow -	271	" Liverpool	218
Hull to Liverpool -	304	" Irish Ports	800
" Belfast - -	208	Dundee to Glasgow - -	434
" Glasgow - -	626	" Liverpool -	318
Newcastle, Shields, etc. to Glasgow -	449	" Belfast, etc.	504
Newcastle, Shields, etc. to Liverpool	333	Hamburg to Glasgow	487
Newcastle, Shields, etc. to Belfast -	298	Copenhagen "	487




SHETLAND Is
ORKNEY Is
Pentland Firth
Leith to Glasgow North about
Moray Firth
Inverness
Aberdeen
Dundee
Stirling
Firth of Forth
GLASGOW
EDINBURGH
Baltic to Glasgow, Liverpool, Irish Ports, Canada & America
Hamburg to Glasgow, Irish Ports, Canada & America
Bremen, Amsterdam & Rotterdam to Glasgow & Irish Ports
Hull, Hartlepool, Newcastle, Shields to Glasgow
Newcastle
Shields
Carlisle
Hartlepool
Dundee to Aberdeen
I. OF MAN
Preston
Liverpool
Hull
Bergen
Christiania
NORWAY
DENMARK
Kiel Canal
Hamburg
Emden
Bremen
GERMANY
Amsterdam
Utrecht
Rotterdam
HOLLAND
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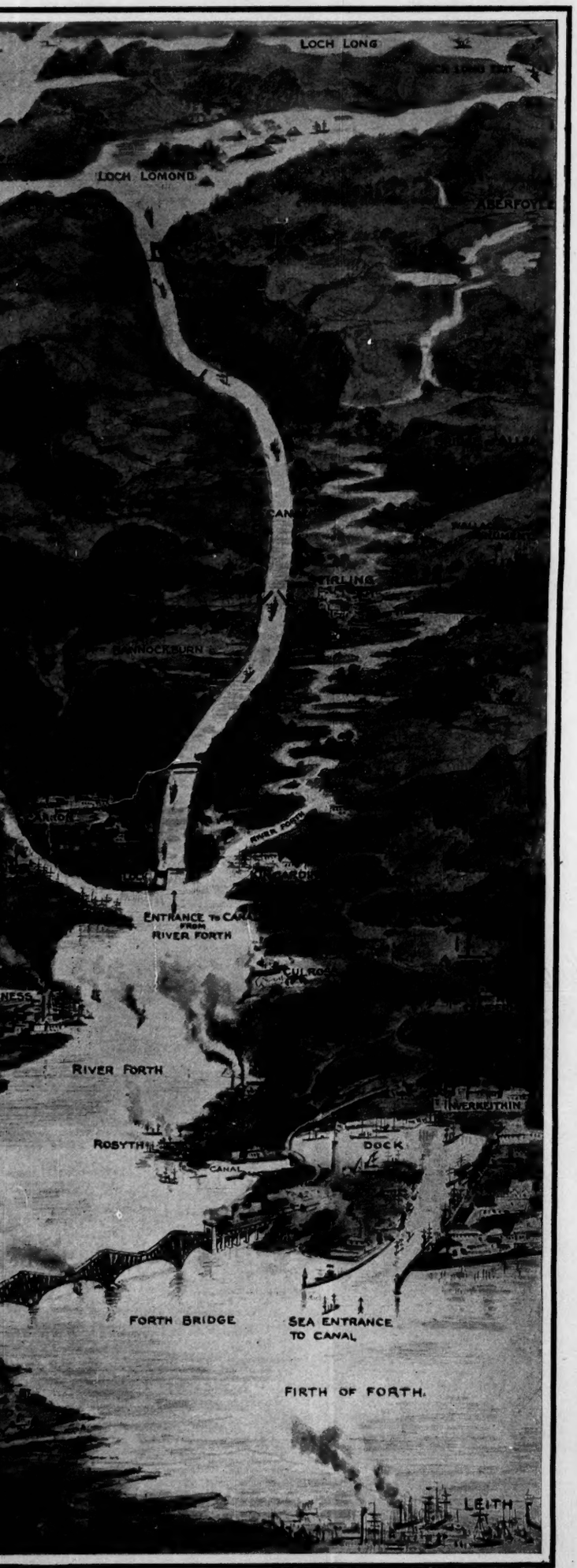
PRINTED FROM **THE GRAPHIC, June 12, 1909**

A Great Waterway Scheme: The Pr



DRAWN BY HAROLD OAKLEY FROM DESIGNS BY

e Proposed Mid-Scotland Ship Canal



SIGNS BY ADMIRAL SIR CHARLES CAMPBELL



statement I made at the beginning, as to the selected route? The route advocated by the Canal Association is out at Tarbet, at the top of Loch Lomond. By and by there is not the slightest reason why a smaller craft canal should not run down the Leven, so as to get quickly into the Clyde; but as I said, there is first of all that bit at the bottom of the south end of Loch Lomond, which is not deep enough, and has a rocky bottom, which it would be very difficult to deepen by dredging. We have given up all idea of making a battleship canal by Dumbarton; it is prohibitive, in the same way as the locks and other matters are prohibitive on the high level route. Anyone who studies the subject will come to the conclusion that there is only one possible route for a battleship canal from one sea to the other, by which the ships will pass through in eight hours. Before sitting down I beg to thank this large gathering for their attendance and sympathetic encouragement, and I should like to add that I am far more indebted to the Marquis of Graham than anyone of you, because he has brought a little opposition into the matter, which has given a fillip to the discussion. In no existing institution are national questions more freely or more impartially discussed than this one; and I venture to hope that the ventilation of this important subject to-day will add one more to the many services rendered by the Royal United Service Institution to the strategical development of the national resources for defending our homes. We cannot afford to leave one stone unturned in our efforts to retain the command of the North Sea by increasing the mobility of our fleets, and I confidently state that when the strategical and commercial advantages are thoroughly grasped by the public, the possible loss of the advance of four millions sterling will be faced and the mid-Scotland canal will be constructed.

The CHAIRMAN (Lord Saltoun):—I will not detain you more than a few minutes in making some concluding remarks. The chief reason that I rise is to congratulate the gallant Admiral, as I am sure you will all do, on the excellent paper he has read; and I also think you will agree with me that the opposition which the noble Marquis has raised to the scheme has given a great fillip to the discussion, and materially assisted it. Whether, when he has further considered the scheme, he will find himself able to fall in with it or not, is a matter which, of course, must rest with himself, but no great scheme was ever suggested, and no great scheme was ever carried through without opposition of a very strenuous kind, and the greater the opposition the more honour to those who overcome it and persuade their opponents to fall in with them. It is now my duty to ask you to give a very hearty vote of thanks to the gallant Admiral for his lecture. I have no doubt that the scheme will now be aired, will go through to the country, and that we shall see what will come out of his efforts in the near future. We know that there has been an inquiry into the matter, and that a report is to be placed before Parliament. When the decision has been announced, and the report has been discussed, it will throw more light on the matter. In the meantime, I am sure that we all join in thanking the gallant Admiral, and in expressing the hope that the scheme may have the support of a very great number of his fellow citizens.

THE SPANISH SUCCESSION WAR IN SPAIN WITH SPECIAL REFERENCE TO THE BRITISH ACTION.

By J. H. ANDERSON, Esq., F.R.Hist. Soc., Barrister-at-Law.

On Wednesday, 28th April, 1909.

Major-General A. E. CODRINGTON, C.V.O., C.B., *p.s.c.*,
Commanding 1st London Division, Territorial Force,
in the Chair.

INTRODUCTION.

THIS war has been curiously misrepresented, because Sir W. Scott, Lord Stanhope, Lord Macaulay, and Professor Dyer have adopted the "Memoirs of Captain Carleton" as their authority. It may be that Daniel Defoe wrote them, or Dean Swift. They are a glorification of Lord Peterborough and a vilification of Galway, and perhaps were dictated by the former. In any case they are not historical.

Colonel F. Russell, in his "Life of Peterborough," estimated him as a hero; Colonel A. Parnell as a scoundrel; Mr. Stebbing adopts a middle view, and Mr. Fortescue follows Mr. Stebbing; but for myself I am convinced that Colonel Parnell is right. Lord Macaulay paints Peterborough as a "splendid knight-errant disliked by the Home Government"; he represents Barcelona as strong, and the earl as its captor; he talks of his daring exploits in 1705-6; he holds him out as the saviour of the city in 1706; and as doing his best to occupy Madrid in 1706, he tells us that Almanza settled the war, and that Galway, a scientific general, preferred to be beaten when acting according to rule, to winning against rule—referring to Almanza. All these statements are the reverse of the truth. The Earl of Peterborough was remarkable for foul living, atheism, boasting, and was not a professional soldier.

The real heroes were Prince George of Hesse-Darmstadt and the Earl of Galway, a Huguenot, and in the war the Germans and Huguenots did much service. Too much praise has been meted out to Admiral Rooke, whom his own Tory Government rightly deprived of command, and too little praise to the able Admiral, Sir John Leake.

The capture of Gibraltar is surrounded by legends; the sailors did not scale the east side rock, Rooke did not pull down the Spanish standard and hoist the English; the defence was good and there was no surprise, the allies losing 321 men.

Causes of the War.

The French had invaded Catalonia during the reign of our William III., and to assist the Catalans arrived Major-General Prince George of Hesse-Darmstadt, who became very popular, and at the close of the war was named Viceroy of Catalonia. The King of Spain, Charles II., had two possible successors—the Austrian Archduke Charles, and the Bourbon Philip duc d'Anjou. The Austrian was preferred by Catalonia, the Bourbon by Castile. In 1700 Charles II. died, devising Spain to the Bourbon, and Louis XIV. accepted Spain for his grandson with the words: "Il n'y a pas de Pyrénées."

This led to the Spanish Succession War (1702-13), in which England, Holland, and the Emperor opposed France. The guiding spirit of the allies was Prince George, who had been deposed from his Viceroyalty, and who now suggested an expedition against Cadiz, the great naval arsenal of Spain.

The Expedition to Cadiz, 1702.

In July the fleet of 50 English and Dutch sail of the line and 100 transports, under Admiral Rooke, carrying 10,000 English and 4,000 Dutch troops, under the Duke of Ormond, sailed from Spithead, accompanied by Prince George. In Cadiz the Spaniards had 9 regiments of foot, 1,000 horse, and some militia; the works were fairly strong, and in the bay were 7 French men-of-war and 8 galleys protected by a chain boom. Along the coasts were numerous batteries. On approaching, Ormond urged immediate assault. Rooke differed, and the general unwisely gave way. Five days then passed in landing the troops north of the city, and they actually plundered some churches, Lieut.-General Sir H. Bellasis sharing in the loot; this had a bad effect. Ormond next opened a weak fire on one of the outlying forts; but the fact is that Rooke preferred bombardment to assault, and in reality, having the gout, wanted to go home. Prince George prevented the bombardment, but could not prevent the re-embarkation of the entire force.

Ormond and Prince George then wanted to winter in Spain, so as to encourage the Spanish partisans of Charles, but Rooke insisted on sailing home.

The Affair at Vigo, 1702.

On the way, Rooke learnt that a French fleet, convoying treasure, had arrived at Vigo, and with unusual vigour sailing to that place found the enemy protected by a boom and by

land batteries. On 23rd October, Ormond, landing south of Vigo, carried the land batteries in that quarter, whereupon Rooke's vessels broke the boom and fell on the French vessels, of which half were captured and half burnt to avoid capture. Again Ormond wanted to take Vigo and winter there; again Rooke objected, and the fleet sailed home.

In 1703 Portugal, owing to Prince George's exertions and Mr. Methuen's skill, joined the allies, as also did the Duke of Savoy.

In 1704, on 7th March, King Charles III. of Spain (*i.e.*, the *Archduke*), with the Prince as Commander-in-Chief, and with 188 vessels and transports and 10,000 troops, reached Lisbon. Portugal, being unprepared for war, a defensive on land was decided on, whilst by sea the Spanish coast fortresses were to be assailed.

The Fall of Gibraltar, 1704.

The expedition under Prince George was to include 5,000 troops, but Admiral Rooke, erroneously thinking the French were besieging Nice in Savoy, would not wait for the Portuguese, and on 8th May left Lisbon with 49 English and Dutch sail of the line and smaller vessels, carrying 1,900 English marines, 400 Dutch marines and 70 Catalans. Prince George's brother Henry accompanied the force. Sailing up the east coast of Spain, Rooke learnt that Nice was not besieged, and at once returned, meeting near Lagos, on 27th June, Admiral Sir C. Shovel with 23 sail of the line. With such strength Rooke could have seized Cadiz, as he was urged from Lisbon to do; he declined, and instead cruised about west of the Straits.

At the end of July, knowing something was expected of him, he did agree to the Prince's suggestion to attempt Gibraltar. On 1st August the fleet neared the Rock and the Prince landed on the isthmus with the land forces but no guns. He thus cut all connection between the Rock and the mainland. The garrison numbered 80 Regulars and 470 militia, on whom the allied fleet opened fire from the west, and on Sunday 3rd August, the defenders' batteries were mostly silenced, and the sailors, landing, carried the New Mole Fort. The Governor then capitulated, and the place was occupied for Charles III.

The Next Event was the Battle of Malaga, 24th August.

Rooke, cruising east of Gibraltar, fell in with a French fleet of 50 sail of the line. After an indecisive action Rooke returned to Gibraltar, where he gave the Prince men and stores, and then made for home, leaving 16 vessels under that first-class Admiral, Sir J. Leake, at Lisbon. The capture of the Rock was little regarded in England.

Campaign in Portugal, 1704.

The allies were 6,500 English, under the Duke of Schomberg, 3,500 Dutch, and 20,000 Portuguese. In May the field

troops were partly in South and partly in North Portugal, all the English being in the former and all the Dutch in the latter. Against them moved a first-class defensive General, the Duke of Berwick, with 28,000 men. He directed his right into North Portugal, his centre and left on both sides of the Tagus into Centre and South Portugal.

On 4th May Berwick advanced, driving the Dutch back on Abrantes on the Tagus, whilst Schomberg, in face of Berwick's left, remained inactive south of that river. North of the Tagus, however, 9,000 Portuguese, under the vigorous Das Minas—70 years old—pushed the French right south on the river. But there now moved against him Berwick's centre, which drove him northwards. Soon afterwards the operations closed owing to the summer heat and to the breakdown of the French horses.

In August a new English General appeared, chosen by Marlborough, the able Huguenot, Henry de Ruvigny, Earl of Galway. He assembled in north Portugal, and vainly urged the defensive on the ground of Portuguese unpreparedness. In October the allies attacked Berwick near Ciudad Rodrigo, were repulsed, and the campaign ended, Berwick himself returning to Paris.

Defence of Gibraltar, 1704-5.

Prince George had a garrison of 2,440 men, and on 24th August 12,000 French and Spanish, with 40 guns and 12 mortars, began the siege, with a fleet at Cadiz to help them, which, however, did not prevent Admiral Leake from Lisbon sailing in with stores and ammunition. After heavy firing the Bourbon General, on 10th November, tried a night assault on the steep eastern side, but it failed. The fire, however, made breaches, and left only 1,000 effectives in the garrison, when fresh help came (in a fleet) from Galway at Lisbon. This enabled the Prince to deliver two successful sorties.

In 1705 (7th February) another assault failed, and soon afterwards the French Marshal de Tessé arrived to take command, and resorted to bombardment. In April Tessé turned the siege into a blockade, and by 28th April he retired, the defence, of which Prince George was the very soul, having lasted eight months.

The Siege of Badajoz, 1705.

From Portugal 17,000 English, Dutch, and Portuguese, commanded for alternate weeks by Galway, Fagel, and Corsana, moved into Spain against Badajoz, but soon retired into summer quarters owing to the heat and to the arrival of Marshal de Tessé.

In the autumn the allies again threatened Badajoz, but the arrival of de Tessé and the serious wounding of Galway

led to the invaders withdrawing into winter quarters, as also did the French. Galway, being in a grave condition, the French Marshal allowed him to enter Spain, and sent him his best surgeons.

Barcelona, 1705-6.

The Catalans were ready to espouse the Austrian cause, and if Prince George had not been a Roman Catholic he would have led the English troops. The post was given by Marlborough, on the advice of his Duchess, to Charles Mordaunt, Earl of Peterborough; the Admiral was Sir C. Shovel, with whom Peterborough held joint naval authority.

The fleet included 66 English and Dutch sail of the line, and 6,500 English and Dutch troops. At Lisbon Galway added two dragoon regiments (dragoons were musketeers fighting either on horse or on foot) and some Catalans, and King Charles III. came on board. The expedition then touched at Gibraltar, where the raw troops went into the fortress and the 3,200 veterans stationed there joined the fleet, as also did Prince George and Prince Henry. On the voyage Peterborough tried to induce Charles to make for Italy; the King declined.

On 22nd August Barcelona was sighted, and a landing was effected north of the place, 1,200 miquelets (militia) joining. Barcelona, not a strong fortress (Fortescue calls it "formidable"), was defended by a wall, a ditch, a covered way, and a glacis. On the south-western side, 1,100 yards off, lay the fort of Montjuic on a hill 700 feet higher than the city. This fort was weak, and was by no means the key of Barcelona.

Peterborough was dead against the siege, but was overruled, and the allies encamped north of the place, the cowardly and jealous Earl obstructing operations as much as he could. The garrison numbered 4,000 Spaniards and Neapolitans; the allies numbered 10,000—two-thirds English—plus a powerful fleet with 24,000 seamen and 3,500 heavy guns, and 3,000 miquelets, and a population favourable.

This superiority was almost neutralised by Peterborough, who wanted to enter Valencia, and thence march on Madrid, or else to sail to Savoy, with whose Duke he had some understanding, though all this was clean contrary to his orders. (Fortescue suggests that Peterborough and Marlborough both held that Spain could be saved only by attacking France from Italy.) At last he got the Valencian project adopted, when the Prince induced him, as a last effort, to agree to an assault on Montjuic.

The storming party under the Prince consisted of 400 grenadiers, 600 musketeers, and 1,300 reserve. On 13th September, at 6 p.m., they started from St. Martin westwards, and then circled round towards Montjuic, but they did not reach the fort till daylight on 14th September, 1705. The

Neapolitan garrison saw the column, which on approaching found the ladders too short, and, worse still, 200 of the enemy issued *viâ* Fort St. Bertran from Barcelona to help Montjuic. The Prince then took 400 men to seize this Fort Bertran in order to stop this reinforcing. On the way he was mortally wounded, and thus fell the hero of the Austrian cause. The officers had great difficulty in retaining the men before the fort. Soon afterwards Peterborough, to whom Fortescue gives great credit at Montjuic, came up with the reserve, and some Catalans carried Fort Bertran. After gun-fire had exploded the defenders' powder and created a breach, the garrison surrendered on 17th September, and on 14th October Barcelona capitulated, with the result that all Catalonia, except Rosas (close to France), declared for Charles III. After this, Peterborough did much harm by his hostility to what he called "the Vienna crew" and by his scattering his forces all over Catalonia.

Meantime all Valencia declared for Charles, except Alicante on the coast, and Peterborough thereupon betook himself with some forces to the pleasure-loving city of Valencia, near which place he in an hour turned Barrymore's Foot into Pearce's Dragoons.

Bourbon Efforts to Re-take Barcelona, 1706.

Louis XIV. of France directed Tessé to march from the Portuguese frontier eastwards to Barcelona, gather troops in Roussillon and a fleet at Toulon. This bold plan of concentrating on the city was much facilitated by Peterborough's folly in withdrawing to Valencia 5,000 of his troops. Even in the city itself only 1,400 men remained.

By 3rd April the French forces and fleet concentrated at Barcelona, and the French siege lasted from 4th April to 8th May. The garrison, under King Charles, numbered 3,600 allied Regulars, 1,500 miquelets, and 5,000 citizens. The works had been improved since 1705, and an entrenchment constructed between Barcelona and Montjuic. The besiegers, 21,000 French, quite surrounded by miquelets, relied for supplies solely on their fleet.

After a fierce assault the fort of Montjuic fell on 21st April; then arrived Peterborough from Valencia with 600 (Fortescue says "3,000") dragoons in the rear of Marshal Tessé. His advice to Charles was to escape in a boat; the King declined, and on 8th May Admiral Leake came in relief.

This relief was thus arranged; 5,000 English troops for Catalonia reached Leake at Lisbon, and he on the voyage, hearing of the French siege of Barcelona, and in spite of Peterborough's orders (as admiral) to land the forces on the Valencia coast "in order to march to Madrid," carried all of them to Barcelona, whilst the Earl did practically nothing outside Tessé's lines (Fortescue denies this), though he did board Leake's ship just south of the city, and did try to figure as the saviour of the place. Tessé then retired northwards into France.

Galway's March, 1706.

Tessé having gone eastwards, Galway suggested a move from Portugal on Madrid. The allies near Elvas numbered 19,000, and opposed to them was the Duke of Berwick with 15,000 Spaniards. The allies, driving the Marshal before them, passed through Alcantara on the Tagus, Ciudad Rodrigo, Salamanca, and over the Sierra Guadarama. At Madrid Berwick and King Philip had 14,000 men, but they evacuated the capital and retired north-east, and on 27th June Galway entered Madrid—a splendid feat for a general infirm, a Huguenot amidst Catholics, and in a district strongly Bourbon. Then was the moment for King Charles to appear, but he did not, and Galway, having stopped 14 days in Madrid, moved against Berwick, who had been reinforced by French troops up to 25,000—one-half French—whereas Galway had but 12,000. King Charles' chance had gone.

King Charles III. and Peterborough.

I must now explain King Charles' movements. After Tessé's defeat, the King, on Peterborough's advice, decided on the Valencian route to Madrid. Consequently 8,000 men were concentrated at Valencia city, including the earl and nearly all the English; but it then became apparent that Peterborough had made no preparations for a march on Madrid, and, worse still, he scattered his men all over Valencia. Charles therefore moved *viâ* Saragossa, and though the earl by 4th July knew this, and that Galway was at Madrid, he delayed his own march westwards, and finally it was 6th August before the King and Peterborough (the latter bringing only 400 dragoons) met Galway north-east of Madrid. Four days afterwards Peterborough, with 80 dragoons, went *viâ* Valencia *en route* for Genoa in order to raise money for the allies: really to see the Duke of Savoy and to indulge in pleasure—in fact, he deserted. He did no more in Spain, and was recalled in 1707 by the indignant Marlborough; he was charged with disobedience and embezzlement and died in disgrace.

The arrival of Charles and Peterborough had raised Galway to 15,000, but Berwick was still superior, and indeed retook Madrid, entirely cutting Galway's connection with Portugal.

Events in East Spain, 1706.

Meantime Admiral Leake had captured Carthagena, Alicante and the Island of Majorca, and Galway also fell back eastwards, followed by Berwick, the former going into winter quarters in Valencia, the latter in Murcia, after retaking Carthagena.

Events in 1707.

A fleet under Admiral Shovel, with 8,200 men under Earl Rivers, arrived at Alicante to reinforce Galway. King Charles

III. should then have concentrated and again entered Madrid; but with fatal results he marched off to Barcelona with many Spanish and Dutch troops, leaving Galway in Valencia. Earl Rivers in all ways thwarted Galway, and was soon recalled.

Galway, thus having only 15,500 Portuguese, English, Dutch, Huguenots, and Germans, decided to move on Madrid, but previously to destroy Berwick's magazines at Yecla in Murcia, which he did on 10th April. He knew that 8,000 French, under the Duke of Orléans, would soon reinforce his opponent, whom, with great daring, he therefore at once attacked, though Berwick had 25,000, half French, and he himself only 15,000, half Portuguese, one-third English, one-sixth Dutch, Huguenot and German.

Battle of Almanza, 25th April.

As usual, Berwick placed his foot in the centre, Spanish horse on the right, French horse on the left; Galway had most of his foot in the centre, the rest interspersed amongst the cavalry on his wings—unusual tactics. The Portuguese were on the right. I have no time for details. Briefly, the Bourbon foot were routed; the Portuguese horse on Galway's right grossly misbehaved and allowed the French horse to play a decisive part, and Galway himself was desperately wounded. The result was a total defeat for the allies with a loss of 20 Portuguese guns. The English did not lose their guns, as so often stated. Lord Macaulay exaggerates the effect of this battle, which was by no means fatal to the allies' cause.

Galway then retired into Valencia, and with all his cavalry marched north to Tortosa in Catalonia, where he arrived on 19th May. Berwick, having captured Valencia city, followed Galway to Tortosa, and then moved up the river Ebro towards Saragossa. In Valencia the French were generally successful, except that they failed at Denia before the splendid defence of the Spaniard, Ramos. This siege is hardly mentioned in most accounts.

In Arragon Berwick and Orléans were entirely successful, and prepared to enter Catalonia. To do this, Lerida must be captured, and to save it Galway collected 14,600 men—such was his energy. In September, Orléans invested Lerida with 23,000 French troops. The Governor, Prince Henry, and the garrison of 2,600 offered a stern resistance, but as the town lay on the farther (western) side of the River Segre, Galway could not assist, and the place fell on 14th November. The combatants then went into winter quarters.

Events in 1708.

As the French had been expelled from Italy it was easier to transport to Spain German than British soldiers. Galway therefore—now blind in one eye and partially deaf—was superseded by Field-Marshal von Staremberg, a soldier second only

to Prince Eugene, whilst the British contingent would be under General Stanhope. Galway became Commander-in-Chief in Portugal.

In May, 1708, Staremberg had in Catalonia 10,200 men, 2,000 being British; Orléans, with 22,000, in July captured Tortosa. Staremberg was then reinforced to 16,000, whilst the French had to detach to deal with Marlborough in Belgium. Both sides then went into winter quarters.

At sea in 1708 Admiral Leake captured Sardinia and Minorca. This was the last success in this war of this able leader. These islands, and especially Minorca, were a fine base for the allies, and Minorca might now with advantage be exchanged for Gibraltar.

This year saw the capture of Denia by the French, together with Captain George Carleton, the supposed author of certain memoirs already alluded to. Finally in the spring of 1709 the last of the allies' fortresses in Valencia, Alicante, was taken, mainly because Admiral Byng at Minorca, and Stanhope at Barcelona, gave no real help.

Events in 1709.

The Portuguese, aided by Galway's 2,800 British, moved near Elvas, and were worsted by the Spanish Bourbon leader in the combat of the Caya. In Catalonia Staremberg maintained his position, and at the end of the year nearly all the French forces were recalled from Spain.

Events in 1710.

King Philip of Spain, with a Spanish Bourbon army, manœuvred against Staremberg, who finally beat him at Almenara, and again at Saragossa. The allies then decided to move on Madrid, which Charles III. entered on 28th September. King Louis XIV., on hearing of the above battles, despatched Marshal Vendôme to Spain. He passed with 10,000 horse and 15,000 foot through Navarre, Valladolid, Salamanca, and thence up the Tagus towards Madrid, where Staremberg had only 17,000 men. The fact is, that the allies should not have occupied the hostile capital; they should have throttled the French invasion in Navarre. The Austrian therefore retired north-eastwards, Vendôme occupying Madrid.

In this retreat the rearguard was formed by Stanhope's British troops, and on 6th December they quartered at Brihuega, 14 miles behind the main body, and separated from it by the River Tajuna. Stanhope posted no picquets; he numbered only 2,500 men, and his isolated position was due to his own wish (Fortescue denies this). Vendôme, with accurate intelligence and covering 170 miles in seven days, pursued, and on 9th December completely surrounded Stanhope in the town. After being fiercely assaulted, and finding his ammunition failing, and no signs of Staremberg, the British general capitulated. Half an hour afterwards Staremberg appeared.

The Austrian Commander then took up a position at Villa Viciosa, north-east of Brihuega, with 14,000 men, mostly Germans. Here, on 10th December, Vendôme attacked with 20,000 men, mostly Spaniards. He placed cavalry on the flanks and infantry in the centre; Staremberg's dispositions were similar. The battle opened with much artillery firing. The Bourbon cavalry routed the Austrian left, and then turned on the rear of the Austrian foot. The Bourbons, however, did not succeed on their left and in their centre, and ultimately Vendôme retired. It was but a barren victory for Staremberg, who had no food, whose men were exhausted, and who heard of Stanhope's capture. He consequently retreated through Saragossa to Barcelona, followed by Vendôme. Thus had the skill of Vendôme given the Spanish crown to the Bourbon Prince.

In 1711, 1712, and 1713 no military event of importance occurred; but in 1713 political changes—to which refer Hallam's words: "The fate of Europe was changed by the cunning of one waiting woman and by the insolence of another; nor would the Bourbons have reigned beyond the Pyrenees but for Sarah and Abigail"—closed the war by the Peace of Utrecht, by which Spain (excluding Gibraltar and Minorca) went to King Philip V. The great blot on this treaty was the British desertion of the Catalans, to whom we had guaranteed their *fueros*.

Comments.

(1) Cavalry were the most important arm; (2) constant disagreement between Admiral and General, and evil effect of divided command; (3) great effect of a hostile or a favourable population; (4) importance of fortresses, which in those days of slow-moving armies were probably of the value assigned to them. We note that the armies are regarded as subordinate to them, as they invariably were till the era of Napoleon, *e.g.*, in 1710 the allies preferred to occupy Madrid to mastering Navarre, which last would have throttled the French invasion; (5) Unusual tactics of Galway at Almanza; interposing of cavalry and infantry had been done by Gustavus Adolphus; it was condemned by Napoleon; (6) winter—and summer—quarters; (7) absence of picquets at Brihuega; (8) Bourbon cavalry tactics at Villa Viciosa the same as Oliver Cromwell's.

The Chairman (Major-General A. E. Codrington, C.V.O., C.B., *p.s.c.*): —As no one rises to offer any remarks, it only remains for me to ask you to express your sense of thanks to Mr. Anderson for his very interesting and instructive lecture on, I think, a rather forgotten campaign. At the time of this war there were other campaigns going on under Marlborough in Flanders, and most of the attention of people who have studied military history has been attracted more to them than to these very important operations in Spain. The history of the campaign, and the facts connected with it, have been extremely ably set before us by Mr. Anderson, and I am sure you will support me, therefore, in giving him a hearty vote of thanks.

ARTILLERY SUPPORT OF INFANTRY.

By Major E. M. MOLYNEUX, D.S.O., 12th Cavalry
(Inspecting Officer, Imperial Service Troops).

"FIRE is the great, the principal, and almost the only, force in battle; the shock is only a secondary incident. All efforts ought to turn towards the good employment of fire. . . . We are compelled to deduce this consequence: that the rational tactical disposition consists in augmenting the effects of the fire on the enemy, whilst sheltering oneself as much as possible from that of the adversary."—General Lewal, *"Etudes de Guerre."*

The above is practically only an amplification of the well-known saying of Napoleon: "Fire is everything, the rest is of small account"—a saying which, if true in the days of Napoleon, must apply with far greater force to-day. And it should not be forgotten that the author of that saying habitually employed shock tactics with a boldness and success unsurpassed in modern war. The combinations of fire which produce the maximum of effect form a study second to none in importance, and are worthy of the most serious attention of every student of the art of war.

In dealing with this subject, I have found it convenient to treat it under the following headings:—

1. A consideration of the conditions which make such combinations of fire both more essential to success and more difficult of attainment than was formerly the case.
2. A review of the various methods at our disposal for effecting such combinations with the reasons which make them suitable or otherwise for our purpose.
3. A description of the methods which, in the opinion of the writer, offer the prospect of the best results under the most varied conditions of weather and terrain.

I.

Up to the middle of the 19th century the difficulty of supporting infantry by artillery fire was hardly felt, and could not accurately be described as a problem involving any special complexities. Indirect fire, except in siege warfare, was hardly thought of; the ranges of artillery were so short that the guns, if their projectiles were to reach their objective at all, had to be fired from positions from which the commander of the artillery could watch the hostile lines of infantry approach and meet, and

where his own eyesight, aided, if necessary, by a field-glass, was usually quite sufficient guide to enable him to render the maximum of support to his own infantry. This he could do from a distance at which artillery would cease to exist in a few moments to-day; for, short as was the range of artillery, that of the infantry firearm was still more restricted.

The fact that the concealment of either infantry or artillery by employment of cover when actually in action, or scientific adaptation of uniform to background was not then studied, removed another of the greatest difficulties with which we have to contend now. The densest of formations and the most conspicuous of uniforms, at distances well within the range of modern rifle fire, gave the gunner a target for the destruction of which quickness, tenacity and courage were the principal qualities required. But the advent of rifled firearms, of ever-increasing accuracy and range, followed more recently by the introduction of smokeless powder, have made the support of infantry by their own artillery one of the most difficult questions of modern war. The disadvantages at which infantry found themselves when unsupported by artillery against a stubborn resistance, even though the latter might be equally unprovided with guns—though experienced in earlier wars — attracted general attention in the Franco-Prussian war, after which it became an axiom that an infantry attack should not be launched until the defence had been shaken by what was called an "artillery preparation." This theory held the field until the days of Colenso and Pieter's Hill, when it became evident that it required considerable modification; this modification being required not because the theory of preliminary bombardment was in itself unsound, but because changed conditions had added so much to the difficulties of carrying it out effectively that the process, at any rate in its crudest form, no longer attained its object. Thoughtful observers had already come to the conclusion that to merely concentrate an overwhelming artillery fire upon a position and then to cease the artillery fire as the infantry were launched to the attack would no longer prove sufficient, in spite of undeniably decisive results often achieved by it formerly. The increased difficulties of reconnaissance, the enormously greater extent of positions occupied, the difficulty of locating hostile artillery no longer perched where it would be expected, open to inspection on the brow of some commanding eminence but carefully concealed and probably using indirect fire as well as smokeless powder, less conspicuous uniforms, the more universal use of cover due to the absence of close formations in the vicinity of the firing line, longer ranges, and the consequent increased difficulty of seeing any target or observing the effects of fire upon it, even if it had been as conspicuous as of old; these are some of the changed conditions that have made the "preliminary preparation"—though as desirable as ever when feasible—seldom possible. The improvement in the range of firearms is relatively far greater than that in modern field glasses and telescopes; these latter—except in field of sight

—are not very much superior to the best in use in the Napoleonic period; and difficulties due to atmospheric causes and to cover and terrain are, of course, exactly as during previous ages.

As early as the Russo-Turkish war of 1877-8 we find a close observer of that campaign indicating the difficulty of supporting the attack of infantry, "thanks to the violent fire of quick-loading guns and to the mass of cartridges which the enemy had at his disposal, which enabled him to cover the ground in front of his works as far as a distance of two versts with a hail of lead."[1] The same observer, in summing up the results of his observations, expresses himself as follows:—

"Whether this (preliminary) bombardment accomplishes any good purpose, or whether it is preferable to make the attack during the night or at early dawn without giving any warning by the use of artillery, has received very little elucidation in the recent war. At Plevna, after three days' bombardment by artillery four times superior in number to that of the Turks, the Russians were defeated in an assault with terrible losses.'" He goes on to give instances to the contrary as well, showing how sometimes under certain circumstances the artillery preparation paved the way to success; but the general conclusion drawn is decidedly adverse to this employment of artillery, which was relied on by the Russians in 1877-8 and by ourselves at the beginning of the recent Boer war, as being in accordance with the German practice founded on the war of 1870-1. "Unlike the war of 1870, where the superiority of the Prussian artillery contributed very materially to the success of the campaign, in the war in Turkey the Russian artillery, although greatly superior in numbers to that of the Turks, played but a minor part. At the battle of Telis (28th October) its shrapnel compelled the surrender of a small redoubt and 3,000 men without the necessity of an infantry assault; at the battle of Lovtcha (3rd September) it so demoralised the enemy as to greatly assist the success of the subsequent assault. It also did good service at the battle of Aladja Dagh in Armenia. With these few exceptions it contributed to no victory and averted no defeat. It consumed several thousand tons of ammunition, transported with enormous difficulty and expense; it hammered away at earth works for weeks at a time without producing any substantial result, and the total losses inflicted by it were probably but little over 1 per cent. of those inflicted by the infantry."[3]

No fighting on any considerable scale between civilised nations with artillery on each side took place between 1878 and 1899. The next war which helps to throw light upon this problem is the war in South Africa. The opinion of the majority of competent observers reiterates the opinion expressed above: that the powers of artillery, if used as a preparation for

[1] Lieutenant F. V. Greene, U.S. Military Attaché at St. Petersburg. "The Russian Army and its Campaigns in Turkey in 1877-8."

[2] *Ibid.*

[3] *Ibid.*

instead of as an adjunct to the infantry attack, are usually almost wasted on a resolute and skilful adversary. What came under my personal observation during that war certainly leads to the same conclusion. At Vaalkrantz, for example, the long and furious bombardment of the Brakefontein position, selected for attack, by an overwhelmingly superior artillery—as far as I remember, writing "without the book," we had 78 guns in action, including naval guns, against 9 of the Boers—produced no very appreciable effect in shaking the defence; and from what we gathered later on from our adversaries on that occasion, the actual losses inflicted by the artillery fire were quite trifling. Yet the intensity of the fire of an overwhelmingly powerful artillery was such that the still green grass (it was the beginning of February) was scorched to such an extent that eventually, after several hours' incessant bombardment, it took fire, and the whole boulder-strewn surface of the hill blazed. At Pieter's Hill, three weeks later, precisely the same results were shown. In each case, the enemy tell us, the terrific "artillery preparation" obtained the most meagre results, even in demoralising the defence. The successes won on Pieter's Hill were won by sheer hard infantry fighting; the tactics of the artillery were already too antiquated to be of the assistance that our infantry expected. Instances might be multiplied. I mention these two as they came very prominently under my notice. The artillery, in addition to this preparation, attempted to support the infantry at the actual moment of the attack; but from lack of proper equipment for co-operation at long ranges—a subject to which I return later—their support was inadequate, and frequently dangerous to our own infantry. This was noticeably the case at Pieter's Hill and at Botha's Pass. There is so much that is admirable in our military traditions—and in none is this more the case than in the Royal Artillery—that we are apt to become somewhat jealous of innovation. The same applies to all Armies with fine military traditions. "Military conservatism, like a cuirass, is impenetrable to anything except an actual bullet."[1] Possessing, as we do, rifled guns whose fire at the longest ranges is practically as accurate as at the closest, we have to ask ourselves whether the traditions of close and self-sacrificing support by artillery, glorious as they are, should not be modified in accordance with the imperative demands of the newer conditions. "Whenever we find that the conditions have so changed that the evidence is no longer good, it must be ruthlessly rejected. All modern circumstances must be carefully taken into account. No maxim or tradition ought to be allowed to stand simply because it was applicable formerly.'"[2]

We are proud, and justly proud, of the grand spirit of devotion to duty which animated our gunners at Sanna's Post, and are confident that should it ever be called for again in the same form it will still be there. The heroism of Colonel Long's

[1] Sir Ian Hamilton: "A Staff Officer's Scrap-book."
[2] "Wellington Prize Essay," 1872.

gunners at Colenso, who unhesitatingly sacrificed themselves in according to the infantry what they conceived to be the most useful form of support, can arouse nothing but admiration.

But we have a totally different feeling regarding the tactics of those who sent them to be shot down in attempting the impossible. Even were it true that a less adequate support is given at long than at close ranges—and, given proper equipment and full instruction in its use, the longer range fire may, from its more vertical angle of descent, be even more formidable—the fact still remains that "a live dog is better than a dead lion." *C'est magnifique, mais ce n'est pas la guerre* applies as truly to the artillery at Colenso as to the Light Brigade at Balaclava. Though most of our fighting has been, and probably will continue to be, against enemies unprovided with modern artillery, who can never be a real danger to the existence of the Empire, and against whom dashing and energetic action will prove quite as efficacious as more scientific tactics, yet we must never lose sight of the fact that our small army must be trained to the highest level of efficiency for a possible contest with a well-armed European foe, numerically far more powerful than ourselves. And our artillery is practically irreplaceable. "Small wars against ill-armed and ill-organised enemies are often positively harmful, for they tend to inculcate a contempt for strategy and scientific tactics. . . . . Our Army ought to make the fullest possible use of all the advantages that a highly-developed civilisation can put into its hands."[1]

Turning now to the conclusions to be deduced from the last and greatest war of modern times, the combatants in this case were more evenly matched, and both were Regular Armies on the accepted model. The contention that "the conditions were abnormal"—by which every unpalatable deduction from South Africa was assailed—is less likely to obtain a hearing.

One of the most distinguished and capable of French soldiers expresses himself in these words on this point: "First of all, we must frankly accept the fact that the lessons taught by the South African war have not only proved themselves to be of undeniable cogency, but have assumed a form so abundantly corroborated in detail as to become conclusive."[2] And the moral which he draws is that of the author of "The *Times* History of the War," quoted above. General de Negrier considers that "We have no right to run the risk of again exposing our soldiers upon the field of battle with out-of-date equipment and obsolete tactical methods."[3]

The following expressions occur in Sir Ian Hamilton's "Staff Officer's Scrap Book": "It is patent—obvious, glaringly obvious—that these (Japanese guns) have not a chance in the fair open field against the Russians." (Vol. II., p. 190.) "The poor old Japanese batteries are being simply smothered. . . .

[1] L. S. Amery: "The Problem of the Army."
[2] General de Negrier: "Lessons of the Russo-Japanese War."
[3] *Ibid.*

This is an exemplar of the weakest point of the Japanese —their weakness in artillery." (Vol. II., p. 195.) "I cannot tell the number of guns in action on either side, but certainly those of the Japanese were the most numerous. In spite of this advantage the Russian artillery slowly wrested back its superiority until the fire in support of the attack again became spasmodic and feeble as heretofore." (Vol. II., p. 203.)

In agreement with practically all other observers, General de Negrier considers that "the Russian artillery was perceptibly superior to that of the Japanese,"[1] and attributes the better success of the inferior artillery largely to their grasp of the fact that "invisibility has become an essential condition; this is the dominant fact of the whole war."[2] In Sir Ian Hamilton's account of the battle of the Yalu, we find a detailed description of the care taken by the Japanese to hide their guns: "Every advantage was taken of the natural lie of the ground, and much artifice employed to conceal the position from the Russian gunners on the north side of the river. Trees were transplanted a short distance in front of the batteries to hide the tell-tale flash of discharge, and were carefully chosen from amongst those which were growing either directly in front or directly behind the entrenchment which was to be concealed. The next morning the landscape appeared unchanged from the Russian side of the river, as the fact that a tree of a particular shape had advanced or retired 200 or 300 yards during the night was naturally imperceptible. . . . When all had been done that could be done to ensure concealment, then all was done that could be done in the time to ensure safety if concealment should fail."[3] The sequel to the above may be found a page or two further on in the same account: "The Russians never had a chance; but just for the first ten minutes the *rafale* of their Q.F. artillery enabled them to look dangerous to the anxious headquarters staff and infantry looking on at a distance. After that, not only the overwhelming superiority of the Japanese in batteries and in weight of metal, but also all their careful preparations told with crushing effect. The Japanese were invisible and comparatively invulnerable; the Russians were conspicuous and everywhere most vulnerable. In thirty minutes the Russian guns were silenced."[4] So far, however, from playing a minor part on account of its distance from its objective and concealed position, the contrary was the case with the artillery on both sides. It is instructive to compare the results obtained by artillery in this war with the comparative impotence of the Russian artillery in 1877-8, already pointed out. To quote once more from General de Negrier:—"As the war went on, it became quite clear that artillery was the dominant factor by day."[5] The French report, quoted by General de Negrier, says: "The artillery dominated the field."[6] Sir Ian Hamilton thus

[1] General de Negrier: "Lessons of the Russo-Japanese War."
[2] *Ibid.*
[3] "A Staff Officer's Scrap-book," Vol. I., p. 106.
[4] *Ibid*, p. 109.
[5] General de Negrier: "Lessons of the Russo-Japanese War." [6] *Ibid.*

describes the effect of Japanese long-range artillery fire at Manjuyama:—"Imagine a swarm of ants entering eagerly by an open door, until the housewife seizes her broom and sweeps them out in tortured, struggling clusters."

In commenting on the brilliant results that the artillery were able to produce, General de Negrier remarks:—"After the battle of Vafangu, on 14th June, the artillery on both sides employed nothing but indirect fire," and that "the battle of Liao-yang lasted from 29th August to 2nd September without the artillery on either side having made use of any but indirect fire." He calls attention to the annihilation which must overtake a battery if located, and which is unable to locate an adversary firing on it indirectly. "So long as batteries were allowed to be located, so long their emplacements became practically so many targets, and in a few moments they were reduced to such a condition as rendered it impossible to retire them from the field. Epaulements, whenever visible, were insufficient to prevent the batteries from being at once silenced."[1]

Sir Ian Hamilton considers the importance and power of indirect fire to be equally noteworthy. In speaking of the artillery results at Port Arthur, he remarks:—"It was very evident from 203 Metre Hill to-day that a harbour or dockyard becomes a mere death trap, provided:—

"1. That the enemy's guns can get within range for indirect firing;

"2. That the enemy can seize any one point from which a single man may observe and correct the fire.

"Against an extended line of guns, hidden away behind some mountain six or seven miles distant, the armament of a fortress is absolutely useless. The concentrated guns of the fort have not a hundred-to-one chance of disabling the concealed and dispersed guns of the attack; whereas, given an observation post, the guns of the attack can hit a ship or house every time they fire. . . ." A little further on he remarks:—"As well might a chess player handicap himself by refusing to jump his knight over the other pieces, as an artillery commander decide that instead of throwing his shell over a hill from safe concealment behind it, he would take his howitzers into full view of all the enemy's artillery."[2] The same process is equally applicable in the field to any clear defined objective as to a "house" or "ship."

But it was not only the soldiers who were struck by the enormously increased importance and power of indirect fire which was manifested in this war.

"This (cramped position), however, did not warrant the amazing lack of knowledge displayed in the placing of the fortress artillery, which was too often full upon the skyline. The result was, that the guns became marks for the Japanese artillery.

[1] General de Negrier: "Lessons of the Russo-Japanese War."
[2] "A Staff Officer's Scrap-book."

and suffered in consequence. The position taken up by the investing army was also well suited for the placing of artillery; and the Japanese placed their guns so well that they suffered very little indeed from Russian practice.

Though all three of the great assaults made upon the Russian position ended disastrously, nothing could have been more wonderful than the artillery support which accompanied them. Perhaps the greatest lesson of the siege was the great success which attended the extensive use of artillery for concentrated fire previous to and during infantry attacks. In the placing of artillery the Japanese have few equals and no superiors."[1] "The Japanese succeeded in establishing an observation post on the crest of the west peak, from which they were able to observe what was going on upon the reverse slopes, and direct the artillery fire by telephone. . . . The independent artillery brigade, comprising six batteries of six guns each, was placed upon a low ridge to the west and a little to the south of the hill, so that an indirect fire could be brought to bear upon troops advancing towards the reverse slopes from the south. Ranges had been carefully ascertained, and telephonic communication established with the observation post upon the crest of the west peak, so that information as to the exact location of reinforcements could be had without delay. . . . During the attack the Russians three times endeavoured to bring reinforcements up the south slopes of the hill. . . . After the position had been taken, the long lines of bodies which littered the approaches and the number of dead upon the reverse slopes, showed the enormously important part the artillery brigade had played in the capture of the position. The practice of the batteries was marvellous, considering the fact that one-half the total number of guns were using indirect fire against the approaches, under directions by telephone from the observation post as to the exact location of the bodies of reinforcements."[2]

The mass of evidence is indeed very great as to the overwhelmingly important part played in the last war by concealed artillery using indirect fire in the support of attacking infantry. There is significance also in the action taken by the leading military Power in Europe, based upon the results of the Russo-Japanese war. The latest German Artillery Regulations[3] embody the most advanced German views on this point, and from them the following extracts are taken:—

"Telephones and flag-signalling are indispensable on active service." This sentence is placed in the introduction, so as to specially emphasise it. "Instead of forming up artillery in a long, unbroken line, it is better to break it up

[1] "The Siege and Fall of Port Arthur," p. 8. By Richmond Smith, correspondent of the Associated Press.

[2] *Ibid*, sec. 362.

[3] "Drill Regulations for the Field Artillery of the German Army, 1907."

into groups. This renders it more difficult for the enemy to locate the batteries, and to range upon them, and so reduces the effect of his fire. The group system facilitates bringing an enveloping fire to bear, and renders observation and fire control easier, especially when the batteries are in 'covered positions' (*i.e.*, using indirect fire)."[1]

"Covered positions render it more difficult for the adversary to locate his target, and are useful in deceiving him as to the strength and intentions of the force opposed to him. They facilitate ammunition supply and change of position, and enable the artillery to reserve their fighting power for the decisive stages of the combat. Under certain circumstances they favour the action of artillery by surprise."[2]

For their artillery, equally with the other arms, the Germans push to its most extreme limits the theory that dash, contempt of danger, and readiness for the costliest sacrifice of life, are of more importance, and more likely to tend to ultimate victory than taking precautions to minimise losses in action. It is from our knowledge of the persistent inculcation of this spirit throughout their forces that we deduce the significance of the admissions contained in the above extracts.

Like the Germans, we must be prepared to pay the cost of victory, be it what it may; and to that end be prepared to incur the heavier losses when the situation demands it, which will be found inseparable from pushing in to close quarters to support an attacking infantry. We have, however, no reason to suppose that either we ourselves or the Germans are more ready to incur tremendous losses to attain an object, than the Japanese proved themselves in the late war. Reckless of life as they often were, nevertheless, they showed themselves quite alive to the necessity of saving their artillery unnecessary losses by never exposing it when they could compass their object without risk; combining a far-seeing prudence with a fanatical headlong courage never seen in any army of modern times—except, perhaps, the Mahdists at Omdurman.

In the light of the only two great wars which have occurred since the new conditions have prevailed, it appears that our own artillery, both in equipment and tactics, require attention on certain points. The tactics employed are dependent upon the equipment at disposal to make those tactics possible.

A very urgent requirement of our artillery is the provision of a proper telephonic outfit for each battery, and proper organisation for communication.

To "spoil a ship for a ha'porth of tar" is poor economy. The whole of the artillery in India might be fitted out with adequate telephonic equipment for a sum very much less than the cost of the upkeep of a single battery for one year. This

[1] "Drill Regulations for the Field Artillery of the German Army, 1907."

[2] *Ibid*, sec. 367 (compare with the views of Gabriel Rouquerol, quoted later).

sounds a startling statement; I propose to demonstrate it a little later, when dealing in detail with the equipment recommended. To go into action without a proper equipment of the kind, means to expose our artillery to the most tremendous and unnecessary losses under certain conditions, if opposed by an artillery well provided with such adjuncts, and expert in their use; and terrain, even the most cursory study of the Russo-Japanese war must convince us, must very frequently occur in a long campaign where direct fire is placed at a hopeless disadvantage compared with indirect fire from concealed positions, and where visual signalling might be unsuitable or impossible. Useful as visual signalling is, and highly as it has been developed in India, it is not by any means equal to telephonic communication under circumstances of very common occurrence; and it requires no demonstration from me to prove the gravity of the situation in any action where our artillery was outclassed and unable to afford adequate support to its own infantry. The vital importance of the artillery co-operation is written on almost every page of the Russo-Japanese war. It cannot be too clearly emphasised that it is not worth our while, from motives of economy, not to have telephones. I understand, however, that the supply of these articles is now under consideration. I propose to proceed with the consideration of the tactics that we require to adopt, assuming that our equipment for war is complete.

In the first place, the time-honoured maxims regarding the necessity of massing batteries require very considerable modification. Concentration of fire is as essential as ever; perhaps even more so. But concentration of fire no longer need mean concentration in one spot of the batteries which deliver that fire; exactly the same control can now be exercised over batteries widely dispersed, and an even greater effect produced by the converging fire of dispersed batteries from several points than could be produced by the same volume of fire from the same firing point. Two factors are mainly responsible for this: the vastly increased range of modern artillery and the absolutely instantaneous nature of telephonic communication.

The normal average ranges at which artillery fought during the Russo-Japanese war were about two miles. (*Vide* De Negrier's "Lessons of the Russo-Japanese war," quoting from French official report.) This does not, of course, by any means represent the full range of field artillery; it is clear that artillery, even if two miles from a hostile alignment, is under no necessity of firing only to its immediate front; it has a very considerable latitude, extending to a couple of miles to either flank, the range required being the side of the triangle subtended by a right angle as compared with its fire direct to the front. The instantaneous nature of electricity also allows of orders being communicated to widely-dispersed groups of artillery in less time than they could reach the furthest limits of a long line of batteries in action controlled by the word of command of a

directing officer; and, given the most modern light instruments and adequate familiarity with their use, telephonic communication can be opened by the operator accompanying any battery with the artillery commander before the battery is ready to open fire, no matter what may be the pace at which the battery may have to move or the ground it has to traverse.

The second requirement is that each battery should have its own supply of telephonic gear for connecting the director of fire with his battery when using indirect fire.

All such light telephones should have their cable gear independent of any wheeled transport, for the following reasons: In many of the most probable theatres of future wars of the British Army, roads suitable for wheeled transport are scarce and bad; in some they may be said to be practically non-existent. The observer and director of fire will frequently be required to observe from a point inaccessible to wheeled artillery in such countries.

It will be remembered that in 1878-9, Sir Frederick Roberts, when marching to Kabul *viâ* the Peiwar Kotal and Shutargardan Passes, had to put his light horse artillery guns on elephants to get them along. A picture of this operation may be seen on the reverse side of the medal issued for the campaign, with the gun on the elephant's back. If such be the condition of many of the main roads in such countries, it is obvious that the observation posts for batteries working along such rough roads must be usually still less accessible to anything on wheels. Roads are not made to eminences and other points which in war would be suitable for observation. Anyone who has any knowledge of the topography of the Indian frontier, Afghanistan, Persia, Abyssinia, etc., must be aware of this. On the continent of Europe, where a gate opens into every field, and excellent roads lead in every direction, this necessity is less generally felt, though even there, there are certain mountain areas where wheeled transport would have little scope. Even where wheeled transport can move freely, however, there is no particular object gained in using a horse and cart for work for which a horse alone is sufficient.

An apparatus, the invention of an officer of the Indian Army, has for some time been under trial for this purpose, and it is understood to have given very satisfactory results. With this a couple of drums of cable are carried on the limber of one of the guns. When telephonic communication is required between an observation post and the guns, these drums are slipped into a light metal frame in front of a horse ridden by the telephone operator, who rides to the point required for observation, the cable being paid out automatically as he rides forward; he regulates his pace according to the situation, the cable being laid out at a gallop if it is necessary to open fire at once.

With quick-firers in use by almost all civilised nations, the rapid opening of fire may at any time be all important; the

use of this apparatus would seem to be the best solution of what, in rough countries, might be an impossible process with carts and a very slow one for men on foot. The apparatus is so constructed that the drum of cable can at any moment be slipped off the horse and transferred to work on the back or hip of the operator, which would be useful were the horse shot or injured or be found too conspicuous, or meet ground too steep for a horse to negotiate. By reversing the action of the instrument, the cable can be recovered on to the drums, if desired, as the horse is ridden back to the starting point, multiplying wheels being used to make the process very rapid. In time of war, telephone cables would be used up as freely as ammunition when necessary, and might be left lying, as was often done by the Japanese; but the process for recovering cable would be very useful as a rule.

Telephonic communication between the infantry and supporting artillery is also essential; if an artillery officer can be spared to accompany the infantry advance, the result of his observation of fire effect will be invaluable to the supporting artillery, if communicated to them by telephone.

It is not sufficient, in the infantry attack, that the artillery support should be continued up to the last minute; it must be kept up to the last second.

With infantry closing on their opponents at a distance of two miles or more from their supporting artillery, there is only one agency by which this can be ensured to the full—that of electricity. As already pointed out, the guns cannot always be rushed up to give "close support" to the infantry, as in days gone by; it would mean under some circumstances very heavy loss, and quite probably defeat its object by the failure of artillery support, due to the wrecking of the batteries, just at the moment when it was most sorely needed by the infantry. Time at a critical moment would be lost over a change of position. "For guns to change position when troops are actually engaged is extremely difficult. The desideratum, of course, is that infantry attacks should be accompanied by simultaneous fire from batteries close at hand. This, however, can only be realised in exceptional circumstances."[1] Except in the case of the enemy being in position on abruptly rising ground, fire over the heads of our own infantry could be continued much later from the longer ranges, and with telephonic direction from the infantry firing line or in its vicinity, the firing would be probably quite as accurate. In any case, in the event of it being advisable to push the artillery in closer in support, it may often be well for some portion of it to continue firing from the original position. There is, of course, the inevitable danger to the infantry from premature bursts due to defective fuses; that, however, cannot be helped, for "war," as the Baboo truly remarked, "is a dangerous department."

[1] De Negrier: "Lessons of the Russo-Japanese War."

One of the commonest errors to which gunners are subject is well illustrated by the following passage taken from an account of the fighting on the Taitsuho. I noticed precisely the same incident occur at a practice camp in the rolling country near Chandigarh. It can best be corrected at once by the use of telephones in the hands of an observer near the target: "There were hundreds of Russian shrapnel bursting in rafales of eight over and above these guns. The enemy's batteries had ranged on another ridge about 400 yards beyond their real objective. Some trees grew upon the further ridge, and no doubt helped the common optical delusion, whereby from a distance two features merged into one, and the intervening valley escapes notice. All gunners are aware of their liability to go wrong from this cause, but the Russian practice of ranging in the air with time shrapnel, instead of on the ground by percussion shrapnel, undoubtedly gives greater scope for such mistakes. Anyway, the Russian rafales, so savage in their seeming, were no more dangerous to the artillery against which they were directed than a Crystal Palace firework display."[1] If this error were seen from the firing line, then, failing a telephone, only two methods suggest themselves: to explain the error by visual signalling—supposing it to be possible that a signaller could stand up and signal by flag or helio. from the firing line—or to send a messenger to the guns. Either process would be comparatively slow. "No one who has had any experience in war will treat lightly the delay which occurs when pressing messages have to be sent to some other, perhaps distant, point."[2] When no adequate arrangements have been made for instantaneous communication between the guns and infantry, disastrous results have followed. An instance, too long to quote, will be found in Bennet Burleigh's account of the destruction by its own artillery of the 34th Japanese Regiment at Soushan-pu.[3] The Japanese artillery in this case caused terrible havoc amongst their own infantry as the latter rushed the position, through not knowing when to stop. On at least one occasion—on Pieter's Hill, our own artillery were unable to avoid the same errors; on another occasion, through lack of adequate means of communication, I noticed that the artillery fire was turned off sooner than necessary, and, indeed, ceased just when it was of greatest value.

The use of the "covered position," where equally good support can be given by it as can be done by exposing a battery, should be thoroughly inculcated into our artillery, just as much as the use of cover is insisted on for the infantry.

Every artifice should be encouraged to induce the enemy to direct his fire to the wrong place. Next to being bullet-proof oneself, there is no more satisfactory position than that

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[1] "A Staff Officer's Scrap-book," Vol. II., p. 94.
[2] Clausewitz: "On War," Book V., chap. V.
[3] "Empire of the East; or, Japan and Russia at War, 1904-5."

of knowing that the enemy's fire is being directed elsewhere. I remember an exceedingly simple ruse explained to me by a surrendered Boer in South Africa, which had proved very efficacious. A couple of Boers sat close in under the shelter of a slightly overhanging stone on the crest of a hill with a couple of "reims" tied together and fastened on to a bush a little way off. A Boer gun was firing a little to their flank. Every time it fired they gave the "reim" a smart jerk backwards and forwards, throwing up a thin film of dust. Their own gun was being fired over a tarpaulin to keep down the dust, with a blanket behind a thorn bush to fire through and so hide the flash. The faint puff of dust, which came every time the gun fired, quite convinced us all that it was caused by the wind of the discharge; it went on until the "rimpi" was cut by a shrapnel bullet. I remember seeing in Victor Bulla's photographs from the seat of war in Manchuria (many of which were published in the *Sphere* newspaper), some drain pipes mounted on carts which proved very efficacious as "shell traps." A drain pipe, hollow metal telegraph post, or even a wooden trough, with some loose powder to give a flash and blow up a little dust carefully placed for it to fire into might easily prove of equal value—if fired from just behind a crest of a hill, so as to coincide exactly with the firing of a real gun at a safe distance to the right or left of it; if fired by electricity by the use of a couple of hundred yards of telephone cable the firer would be in no danger whatever. Far better that the enemy should be satisfied that the fire came from there, and direct his attention to the spot he fancied it came from, than that he should commence to "search" what might quite possibly be only a very limited expanse of cover with his shrapnel, with the strong probability of doing some damage, as he very probably would do if he were sure that the fire came, for example, from behind a line of low hills a few hundred yards in length.

The next point to which I would invite attention is the taking up of preparatory positions, with a view to be able to immediately inflict the maximum damage in the shortest time, should the enemy take a certain course which appears probable. It consists, briefly, in gauging the enemy's intentions and lying in wait to crush him by an unexpected torrent of fire as he attempts to put them into effect. "Combined Training" says that "artillery will not come into action until a target is presented to them." Some years ago, before we had the experience of the Russo-Japanese war to guide us, a talented French officer of artillery, Gabriel Rouquerol, anticipated one of the lessons of that campaign by his advocacy of the *position d'attente* — a view now accepted by the Germans and embodied by them in their latest Drill Regulations for Field artillery, under the name of "lauerstellung," or "lie-in-wait" position. The view put forward amounted to this: that on the one hand we waste ammunition by a premature bombardment

before knowing with any exactitude the dispositions and locality of the hostile forces; on the other hand, by not bringing our artillery into position until the enemy had disclosed something of his dispositions and the positions of his guns on the approach of an infantry attack, we waste what might prove to be a golden opportunity, unless we are ready to profit by it to the utmost the instant it presents itself. The enemy is found holding a certain position. A certain proportion of the artillery is told off to watch for his artillery coming into action, and to immediately engage them; the rest of the artillery, pending developments, is told off to a *position d'attente* under cover. The infantry attack now begins. The commander has already made up his mind that the enemy will choose a certain line of counter-attack, and that his supports will be advanced by certain approaches. Against this foreseen movement the whole of the artillery in *position d'attente* is ready; ranges have been taken, position occupied, guns laid, observation posts selected, and all orders already issued; the gunners stand with their lanyards in hand ready to sweep the doomed area with a hurricane of rapid fire upon the enemy attacking across it. Should the enemy's intentions have been incorrectly forecasted, it is contended that the artillery are no worse off than before; they have not disclosed their position, intentions, nor strength, and are just where they would have been had no *position d'attente* been taken up. It is now known that something similar was done by the Boers at Colenso and Pieter's Hill; certain patches, over which it was looked upon as probable that our troops would advance having been marked by burning them, the Boer gunners being in *position d'attente* for their occupation by the British. Tactics very similar in principle marked the action of the Federal artillery at the battle of Gettysburg, when they silently lay in wait for the charge of Pickett's Virginian infantry—a charge which, if successful, might have changed the result of the greatest battle of the campaign, and with it the history of North America. Instead, the charge was beaten back with the loss of six-sevenths of those taking part in it. (Henderson, "The Science of War," Chap. X., p. 305.)

A more elaborate measure of forethought, somewhat similar in principle, which it might also be well worth our while to practise in time of peace, though only applicable where time has been available, is that of which the following description is given by Sir Ian Hamilton in his account of the battle of the Yalu: "It now only remained to perfect the arrangements for offensive action. With this object, two observation stations (marked on the map) were established on the high ground some 3,000 or 4,000 yards in rear of the batteries, from whence a good view could be obtained of the Russian camp behind Chiuliencheng, and of the lateral communications, such as they were, which ran in rear of the Russian entrenchments. These observation stations were connected with the howitzer batteries by telephone, and both batteries and observation stations having

duplicate maps of the enemy's position marked out in small squares, the observers on the southern heights were able, by merely telephoning down the number of a square, to switch the whole fire effect of the masked batteries on to any spot where they from their elevation could see a suitable mark present itself. Platforms were also erected in trees on the flanks of batteries from whence officers would be able to make local observations of the effect of their fire. All this was accomplished in one night. . . . .'"[1] If these uses of the *position d'attente* be compared with the very similar use made of the same principle at Port Arthur, a description of which, by Mr. Richmond Smith, has been already given, it may reasonably be assumed that occasions will occur constantly in war where the support of the infantry can best be ensured by the full elaboration of a scheme based upon a shrewd forecast of the enemy's intentions.

"The artillery not infrequently produced a startling effect upon troops which, believing themselves sheltered, had committed the blunder of remaining in close order instead of deploying into open formation. On July the 9th, the Japanese had massed their infantry together in a valley near Gaitchu. A Russian battery of 30 guns, placed behind a low hill, concentrated an indirect fire upon them, and in a few moments wrought considerable havoc."[2] Little imagination is required to realise the importance of the results of a scheme of the kind, if fully successful.

So appalling is the rapidity of fire of the latest type of quick-firer, so terrific the effect, that it might easily happen that a blow of crushing weight had already been delivered before the enemy had realised the situation sufficiently to take measures to meet it. Appropriate changes of orders have to be thought out, communicated, and carried into execution; above all, the concealed artillery which is doing the damage has to be located, ranged on, and silenced; and meanwhile the infantry attack—its task immeasurably lightened by the fact that those immediately opposed to it are reeling under the weight of a sudden and unexpected tornado of shell — has become so threatening a factor that no guns can be spared for dealing with any other arm. It can hardly be gainsaid, I think, that to deny ourselves the possibility of the action indicated above, which might at any time be demanded by the situation, would be to place us at a most serious disadvantage as compared with an adversary whose freedom of action was unrestricted. It has been shown that we cannot ensure adequate support to our infantry without ensuring the most rapid communication, not only between the infantry and artillery, but between the dispersed fractions of the artillery; the advantages of the infantry commander being in touch with his infantry during all phases of an action are equally obvious. I have not insisted on this

[1] "A Staff Officer's Scrap-book."

[2] De Negrier: "Lessons of the Russo-Japanese War."

latter point hitherto, as the same reasons apply as in the cases given, and are equally cogent. Examples of the disastrous results due to failure of communication between an infantry commander and his troops are so numerous in every campaign of which we have record, that I will content myself with naming a few engagements at random, in which disaster resulted from it:—Adowa, Gettysburg, Spion Kop, the Motienling, and the Russian attacks at Plevna. "We have no right to run the risk of again exposing our soldiers upon the field of battle with out-of-date equipment and obsolete tactical methods."

I make no apology for repeating this quotation from General de Negrier. It applies to us just as aptly as to the French. Obsolete tactical methods are, to a great extent, the corollary of out-of-date equipment, for we cannot possibly make full use of the most modern methods or armament if we are deficient in the mechanical machinery required for using them. Two points stand out as a result of our investigations above:—

1. Co-operation between infantry and supporting artillery cannot well be ensured without some means of rapid communication between them; the more instantaneous and inconspicuous the better.
2. Neither arm can utilise to the utmost the increased powers conferred upon it by recent extension of the range of firearms, unless provided with the means of similar inter-communication within its own component parts.

(To be continued.)

TRAINING FOR TERRITORIALS.

By Major J. H. HASTINGS, 6th Battalion West Yorkshire Regiment.

"Had some new question been under discussion, O men of Athens, I would have bridled myself until those who usually give their opinion had spoken, and if aught they said pleased me, I would have held my peace."—*Demosthenes, I. Philippic.*

IT is very surprising, I think, that no old Volunteer has replied to General Baden-Powell's lecture of the 21st October, 1908, on "Training for Territorials," a lecture which not only contains much food for thought, but also affords much ground for discussion.

Mr. Haldane, differing from his predecessors, came into office with no cut and dried scheme of a civilian for the reform of the Army, but with an open, judicial mind. He took evidence from experts, summed up and pronounced sentence. Whatever may be said of his changes in the Regular Army, it is certain that for the Home Defence Army he has provided a scientific organisation—an organisation which, moreover, will remain, whether its cadres be filled by voluntary Territorials or compulsory service men. As to this there can be no question.

That we must have a Home Defence Army both great political parties and all thinking Englishmen are agreed. Indeed, those who fully and frankly speak their minds go further and point to the necessity of the Territorial Army not only as a force for home defence but also a means of training officers and men for wider Imperial purposes, when again a great oversea war makes a call upon the nation, as assuredly will one day be the case.

The question which General Baden-Powell set himself to answer was, however, not whether a Territorial Army on present lines was the best thing for this country, or whether such a force could in the time available be made fit to withstand Continental troops, but whether "the method used by the army for training the Regulars is in every way the best adapted for training the Territorials."

Unfortunately, discussion wandered far from this question; indeed, only here and there did it touch it. As a member of the Institution, who was not present, although somewhat late in the day, I may, perhaps, be allowed, with all respect for the gallant General's opinions, and with due deference, to offer a few criticisms—not all, I hope, destructive.

I propose to deal with General Baden-Powell's paper under three heads:—1. His observations on the Volunteers of the past; 2. His proposal for the training of the Volunteers or Territorials of to-day; and 3. General.

I.—Observations on the Volunteers of the Past.

One cannot help feeling in reading General Baden-Powell's lecture, that his knowledge of Volunteer Forces has been gained in the Colonies rather than at home; or that his knowledge of home Volunteers has been gleaned from their work in the sixties. I have had an intimate connection with the Force for nearly a score years, and am astounded to hear of Volunteers to whom "it put a different complexion on their joining the Force, and upon their work, when it was mooted among them that they had to learn fighting."

Then as to the "goose step." I remember when I went through my recruit's course, being asked by a man in one of the London Corps if I had got through the "goose step" yet; but to the best of my knowledge this (the "balance-step") has never, for 30 years at all events, been part of the curriculum of the Corps to which I belong, and for many years it has been, I believe, no *usual* part of the Volunteers' training.

The Corps that I know—and I have seen, trained with, or mixed with a good many—have all put fighting efficiency first, and would resent strongly the charge that they were, in the words of the lecture, "a parade force with a certain amount of drill in them."

What have we been doing for the past quarter of a century? Tactical Societies for the study of military science and the education of the officers of the Volunteers have sprung up, wherever there were a few Corps. The Manchester Tactical Society dates from 1881, the West of Scotland Tactical Society from 1885, and in London there are many with a similarly long history. In the North-Eastern District, with which I am best acquainted, local societies, like those of Leeds and Bradford for example, were amalgamated in 1894, after many years of useful work, to form the North-Eastern District Tactical Society, with headquarters at York, divided into the Tyne and Tees, North and East Ridings, West Riding, and North Midland Sub-districts, and these are divided into "centres." This amalgamation of societies owed its origin to a Volunteer, the late Colonel H. D. Sichel (3rd V.B. West Riding Regiment). Colonel the Hon. J. G. Napier, "Garrison Instructor" at York, was the Hon. Secretary, and General Sir Reginald Thynne as President was a most invaluable "chief" and help to the work. The local centres had lectures followed by staff rides, or what we then called "outdoor tactical exercises," for both officers and non-commissioned officers—alone or in connection with neighbouring "centres." Twice or three times a year the whole society had a combined exercise, by turns in the various sub-districts and under the direction of the general and his staff.

Whether these were serious work or not may be judged when I say that as critics we had at one time or another, in addition to the general and his staff, many distinguished officers, General Wauchope of the Black Watch, Colonel G. F. R. Henderson, of "Stonewall Jackson," and Colonel W. W. M. Smith among others.

This theoretical and skeleton work was afterwards put into practice. Company manœuvres followed by small operations of two or three companies, led up to half-battalion and battalion work preparatory to the annual camp training. Night outposts and attacks were carried out with Regular officers of experience as critics.

War games were played, as they have been for twenty-five and thirty years, and as they are still.

In all districts similar work was done.

General Baden-Powell observes that "the objects of the new Force are very different from the old"; but this is surely not so. In either the object is home defence. He finds "the present officers we are getting far more capable and far more keen than he had expected on taking over his division"—"they are quite anxious to take up their work." No doubt the magnetism of their general's presence, example and words, has kindled, as it would anywhere, an enthusiasm warmer than existed before; but no doubt also many of the officers in question were keen before—had taken examinations in "C," "D," and "G," had been through a course at Hythe, or in signalling, or in other ways shown their willingness to make themselves something more than paper efficients and, above all, had trained their commands well.

There is at present a feeling that the Territorial Force is a vastly better trained Force than the Volunteers. It will be in time, but that time is not yet. The fact that we had a fortnight under canvas last year, instead of a week, did something for us; but (I am speaking of training not organisation) it is doubtful whether the Territorial to-day is any better trained than the Volunteer of 1900 after his fortnight at Aldershot or Salisbury Plain, or elsewhere.

General Baden-Powell found that they need not waste time in trying to teach their officers their business as they had only to expect them to know it, and they would learn it for themselves. Has the passing of the Territorial Force Act wrought this miracle? Presumably 80 or 90 per cent. of his officers are old Volunteers, who were formerly animated by a like spirit.

In his lecture the General tells how he "trained Colonial Forces of Volunteers for Active Service in the shortest possible time—men who had within a few weeks to take their place on the actual field of battle." He says it was on those occasions impossible to get "any efficiency by going through the old methods of the 'goose-step' and so on. 'Sword exercise' had to be abolished." These remarks are by way of contrast to the system under which it is more than hinted the home Volunteers were trained.

Of the home Volunteer Force 18,000 officers and men went to the South African War in formed detachments, and some thousands more went in one force or another.[1] How did they—trained, as is suggested, in the "goose-step" and "sword exercise"—acquit themselves? Colonel Henderson wrote of them[2]:—"In a very short time the Volunteers were not to be distinguished, except perhaps that they depended upon themselves rather than upon their officers, from the Regulars."

They do not appear to have sent deputations, like the Colonials of the lecturer, to say that their "officers knew no more about war than themselves, and that they did not like to trust their lives to them," or to have asked "whether they could have Regular officers?"

It may be said that these home Volunteers were picked men and above the average. They were the best of the men who came forward voluntarily, offered themselves without compulsion. The *only actual selection* was in the matter of musketry and the medical examination. It is certain that in 1900 the Volunteer Force could have turned out many thousands more in every way as good as those who went to South Africa.

Ten drills and camp may have been enough to satisfy regulations, but in any reasonable corps the average was more like twenty drills and camp.

I know too well the deficiencies of the Volunteers and the inequality of the training and efficiency of the units forming it; but General Baden-Powell's sweeping condemnations I venture to consider undeserved.

II.—Proposals for the Training of the Volunteers or Territorials of To-day.

No one can criticise the excellence of General Baden-Powell's "Main Steps to Efficiency," namely:—

1. Officers made responsible for their units.
2. Sub-division of units into small groups.

In the West Riding of Yorkshire these principles have been followed for many years. I mention this as being within my own knowledge, but I have no hesitation in saying that it has been very generally so in the Volunteers at home, and not merely in the Colonies.

What is wanted is that every officer of the Territorial Army should take a serious interest in his military work; be assiduous at drill and musketry, but also a student of military science and history—at home, in camp or bivouac—able to light a camp fire and make a rough meal; able to extemporise a shelter at night, against either weather or bullets; and able to work across unknown country by map and compass. Book learning is not enough. "No books will ever make a man a soldier," says

[1] *Times* "History of the War," Vol. III., p. 21.
[2] "Science of War," p. 425.

General Maurice.[1] "No books will do him any service which tend to distract his thoughts from the study of men, from the care and command of men, from sympathy with men, from learning to deal with men, from active life, from practical energy."

There is nothing new in this. Forty years ago Lord de Ros wrote[2]:—"Of all the studies to which a young officer should direct his mind, none will be found more important than that discrimination of character, and observation of the habits of the soldier, upon which so much of the officer's influence and fitness for command must depend. Let him endeavour to imitate the manner in which the best officers of the different ranks of his regiment exercise and maintain their authority. With this attention anyone possessed of ordinary good sense will soon acquire the true and only mode of governing soldiers and gaining their respect and attachment. Popularity of manner alone will not avail; the first step towards this important end is a thorough knowledge of his own duty."

Supposing, then, that our officers are all aiming at some such ideal, let us consider how they should train their commands.

I venture to say that close order drill comes first of all, as the foundation of discipline and ready obedience, and, indeed, as a *necessity* where large forces such as the divisions of the Territorial Army have to be assembled and moved.

To quote the Boers, as General Baden-Powell does, as an example of how undrilled men may fight, is, I think, a dangerous and misleading argument in any case, but particularly when the argument is used as a basis upon which to build a system of training for the British Territorial Army.

Colonel Pollock has indeed pointed out[3] the importance of "training the *man* by attempting to revive in him the inborn qualities and instincts of his forefathers—the hunting and fighting instincts of primitive man"; but he holds that it is only *when small bodies are opposed to small bodies,* "and success depends upon individual initiative," that "Boers, backwoodsmen or native hordes possess advantages against which ordinary training will be found to be of little use."

The purpose of the Territorial Army is not to deal with such small bodies, but to oppose a Continental Army of highly trained troops.

It must be remembered, too (and particularly by those who hold that Rifle Clubs are all that we need), that the Boers were something more than simple farmers who could shoot. Their shooting was certainly one great feature of their strength, but not the whole secret of the wonderful stand they made. Their horsemanship, their mobility, and (bred of life on the veldt) their independence of elaborate supplies and transport—further, their *existing organisation* under field cornets and commandants—

[1] "War," p. 119.

[2] "Young Officer's Companion," p. 2.

[3] *XIXth Century*, May, 1905.

were all factors which made for success; as also their knowledge of the country, and the fact that their horses needed no acclimatising.

They had been preparing for the war for years, whether before the Jameson Raid or not is immaterial; at all events, they erected forts at Pretoria and Johannesburg, and imported large quantities of arms, equipment and ammunition nearly two years before the Raid[1] (that is, six years before the war). Many of their leaders had experience of war against natives, and a great many of the older Burghers in the ranks had also.

The Transvaal artillery was commanded and trained—that is drilled—by Wolmarans and Erasmus, who had been sent to Europe by Joubert to study the work. The Free State artillery was trained and commanded by a German, Major Albrecht.[2]

If the Boers did so much to train their artillery, is it to be supposed that the rest of their force was untrained? Would they *everywhere,* for example, have made the same type of trenches, *a type new to war,* if there had been no thought-out scheme of training before the campaign?

This training was not drill it is true, but highly special training for a peculiar campaign of a very different order from any that the Territorial Force is designed to engage in.

For fighting in enclosed country, where control is well nigh impossible, "individuality is more than ever valuable . . . . each sub-commander has to think for himself,"[3] but for such work very high training is needed. "In the Orleans campaign the French General Chanzy hoped to delay the enemy by holding the banks and enclosures; but here the higher training of the Germans came in. They penetrated the opposing lines and cut off large parties of the French."

Surely such higher training includes *drill,* otherwise control would be quite impossible; and it is to be feared that the Germans would overmatch us as they did General Chanzy.

General Baden-Powell would train our men as the roughest Irregulars; "they can," he says, "pick up drill and such items afterwards."

What comes of Mr. Haldane's organisation in such case? What sort of a hopeless mob would the Territorial divisions, *undrilled and hastily mobilised to repel a hostile raid,* be? No amount of individual intelligence and individual *minus-drill* training will make up for drill *when large forces are to be assembled.*

Every officer of the Volunteers must have noticed, when the pendulum had swung too far in the direction of open order, wide open order, and nothing but open order at the time of the South African War and just after it, how any of his men, who had a tendency to get lax, soon got out of hand.

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[1] "Great Boer War," by Conan Doyle, p. 67.

[2] "Boer Fight for Freedom," by M. Davitt, p. 330-331.

[3] Colonel Ovens in the JOURNAL OF R.U.S.I., May, 1905.

My idea of the system of training to be adopted may be gathered from what follows[1]:—

The close order work should be done, for the most part, at the beginning of the "drill" season; but while it is going on a company commander should take his subalterns and non-commissioned officers in hand and endeavour to interest them in small tactical schemes. These do not necessarily mean a fixed evening or afternoon when all should work together. Let a captain fix a subject: the defence of A——— Bridge, when attacked by such and such a force from F and defended by such another force; or the best means of attacking B——— Hill from G, and so on.

He should ask his subalterns and non-commissioned officers to study the question on the ground at their own leisure and report within a week (or a fortnight) in correct form—with sketch—which he would then criticise.

Meanwhile, also, a few picked men would be trained as scouts, and all ranks must be taught distance judging and the field signals.

Officers and non-commissioned officers must know how to write reports and messages, and understand the importance of touch and co-operation.

When the company turned out in the spring for small company "manœuvre" trainings, some of the schemes which had been studied theoretically would be worked out with men, the scouts taking their part. As General Baden-Powell well observes, it is not as a rule very difficult to get ground for small forces to manœuvre on, and as a rule the expense need not be great.

Half-battalion or battalion training would follow.

In these operations, which should be on rough ground, with features lending themselves to tactical incident, special attention should, *in the early stages*, be paid rather to such matters as sighting of rifles, cover, extensions, direction, signals, silence, and the co-operation of units, than to the soundness of the tactics.

Such exercises should always be based upon some simple but definite scheme, and should comprise advanced, rear, and flank guards, outposts, attack and defence of positions, villages, bridges and farms.

Entrenchments, head-cover, loopholes, sangars, etc., should be practised; but where local circumstances render this impossible their vital importance should be fully explained, and the principles of their employment shown *on the manœuvre ground*.

During the whole training, lecturettes and explanations should be given as opportunity offers.

This should include all the subjects alluded to in the above "syllabus"; but such matters as camp life and duties, mobilisation, field cookery and field fortification should be touched on, and men should be encouraged to think about them, as about

[1] My suggestions for training are for infantry, but *mutatis mutandis* apply almost equally to other arms.

anything, which, while quickening their interest in their work, might tend to make them better soldiers.

Officers must keep their men interested and remember that they will get more out of them by leading than by driving.

Officers, and non-commissioned officers particularly, but scouts and senior privates too, should be taught rapidly to make up their minds under whatever circumstances they may find themselves.

Some sort of physical training is of vital importance.

In the winter months officers should give special attention to the war game and to examination subjects. Lectures should be delivered to officers and non-commissioned officers. Physical drill, bayonet fighting and gymnastics should develop the physique of the rank and file, and indeed of all ranks perhaps.

But all these things are of no use unless men can shoot straight, and the rifle range must have a full share of attention. The allowance of ammunition is unfortunately inadequate, and it is a wrong state of affairs that, as is the case in most corps, it is necessary for private subscriptions to provide enough for a reasonable amount of practice for the keen shooting men.

The question of discipline, and how to teach and instil it in a force which trains at odd times, and never for more than half-a-day at once, except in the continuous fortnight in camp of exercise, is one deserving the closest consideration of all officers.

We have to inculcate a discipline, of *esprit de corps*, and of pride of company. We have to encourage the spirit that makes a man resolve to carry out to the uttermost the oath he took on enlistment, "to be faithful and bear true allegiance to His Majesty and faithfully defend His Majesty, according to the conditions of his service"—the spirit that makes a man resolve that he will always respect the King's uniform and so conduct himself, whether in uniform or not, that, in so far as he has anything to do with the matter, the Territorial soldier shall be a man to be honoured and respected, and the spirit that makes him resolve that he will be efficient and *able* to fight for his country.

I have spoken up for drill, but drill alone will not produce the discipline that we want. It depends upon character—the character of the officers: their knowledge, tact, firmness, justice, and other qualities which make their men respect them. The Duke of Wellington wrote to his brother in 1812:—"In my opinion those take an erroneous view of what an army is, if they suppose that well-drilled recruits are all that are required of it. Subordination and habits of obedience are more necessary than *mechanical* discipline acquired at the drill; and these can be acquired by soldiers to any useful purpose, only in proportion as they have confidence in their officers, and they cannot have confidence in officers who have no knowledge of their profession."

The question of the different discipline existing among Regulars and non-Regulars was much discussed, with the

Colonial contingents as a text, during the South African War, and it is interesting to read in this connection the following words of Colonel Henderson regarding the American Civil War[1]:—"So far as history can tell us, no army, however high the standard of education, has really become efficient until *obedience has become an instinct*, and the presence in the ranks of men who are accustomed to think for themselves and to reason before acting, however weighty the authority which bids them act, renders the acquirement of such instinct a long process. When soldiers once become imbued with the habit of obedience, then doubtless the more intelligent will be the more useful; but enthusiasm and intelligence will not stand the stress of battle and the hardships of campaigning unless their possessors have *learned to subordinate their reason and inclination to their duty;* . . . . . if the soldier's training is what it ought to be, his education for individual action will go hand in hand with his acquirement of the habit of self-effacement."

We have to train our men, then, in two—at first sight antagonistic—ways, for we have to train them to act intelligently when thrown on their own resources; that is, we have to develop *their individual intelligence*, while we have also to train them to exact drill and implicit immediate obedience, making them as parts of a machine, and to *subordinate their intelligence*.

I admit and realise to the full the difficulty of all this; but an ideal to work to is a good thing.

III.—General.

It is difficult, when all is said, to see how the Territorial Army is to accomplish a high standard of training where the Volunteers failed. Where is the difference? Fourteen days camp instead of seven, and, a very important point, the fact that under the new *régime* divisions and brigades have permanent commanders, whose sole duty it is in peace to train, and direct the training of, the forces which in war they would command, and who have properly organised staffs, which are likewise definitely attached to these same divisions and brigades. Still, there were many brigadiers and brigade-majors under the old order who were not only able but keen soldiers, resolved to make their brigades fit for war; and unless the Territorial Force has, what it still lacks—as the Volunteers lacked it—the support and interest of the British public, the approval and sympathy of the British public, and the resolve of the British public that its sons shall enlist, not all the admirable organisation, nor all the skill of generals of divisions and of brigades, and their staffs, will be able to make the Force so much better than the Force it has superseded as to bring it to the standard which circumstances and the times demand.

The Territorial Force is—and the public will one day realise it—one of the greatest and most valuable educational mediums

[1] "Science of War," p. 300.

in the Kingdom. As a "Continuation School" it ranks high in that most important of all branches of education, the *formation of character*, that is, of will and will-power, tempered by judgment, restraint and subordination. The British public seems to think that to give its children a smattering of about ten different subjects is to educate them, and that provided there are enough subjects, however little the poor infants know of them or understand them, they are fit for the battle of life at 14. But not all the Latin, French, mathematics, and science which a boy learns at school (or perchance does not learn) make a man of him. A very different training and mental discipline are needed to accomplish this; but many schools and school systems appear to ignore this, or else why, after nearly 40 years of compulsory education, are "hooligans" on the increase?

Discipline, habits of order, self-respect and respect for others and for lawful authority, self-control and manliness, are all parts of the Territorial system and training; and it is in such a school as this that character is moulded. Yet how many people, even educationists, still consider the Force of no value?

RASPLATA

("THE RECKONING.")

By Commander VLADIMIR SEMENOFF, Imperial Russian Navy.

Translated, by permission of the Author, by L. A. B.

Continued from October JOURNAL, p. 1341.

CHAPTER IX.

GUARD DUTY—BAD SIGNS OF DEMORALISATION—THE FIGHTING IN JULY AT LUNWANTUNG AND THE GREEN HILLS—A HEAVY LOSS FOR OUR SHIP—REAL SIEGE BEGINS—A SURPRISE WITH OUR SHELL—THE FLEET FIGHTS ON LAND.

IT was on 9th July that our turn came round for guard-ship. The *Diana* therefore remained outside after the "big operation."

We had the typical hot and rainy weather of the subtropical zone. The sky was overcast. It was not very hot, but close; the air was thick with moist steam. Through this kind of haze our searchlight beams had a milky appearance and did not light up distant objects well, whilst they blinded one's eyes, so that one could not see anything. Our 24-inch projectors hardly reached 12 cables [2,400 yards], and even the big 36-inch lights of the fortress only 2½ miles.

Our time on guard was a busy one. The Japanese were evidently furious at our frequent excursions. They turned the favourable weather to good account, and appeared every night in the roads to drop mines and attack the guard-ship.

On 10th July the Japanese only reconnoitred and did not come inside of 30 cables [6,000 yards] from us. The *Diana*, *Gilyak*, and the coast batteries concentrated their fire on them and had no difficulty in chasing them away. To make up for this, two destroyers made a plucky attack on us the following night. They were already discovered at a distance of 3 miles, but did not fire their torpedoes until they had got to 15 cables [3,000 yards]. The next morning we fished up two Whitehead torpedoes which had not sunk.[1] They had evidently been

[1] The Whitehead torpedo possesses an arrangement which sinks it automatically, when it has missed its object, so as to avoid it falling into the enemy's hands.

intended for us. On the other hand, we had distinctly seen some of our shell make hits. The hostile boats succeeded in making good their escape, but they certainly suffered losses in men and damages to their vessels.

During the night of the 12th the attack was renewed. Again it had no results, but apparently we were in luck. We observed one destroyer at about 22 cables [4,400 yards] suddenly stop, and then slowly turn round 16 points, evidently with her engines only. All round her the sea was literally boiling with our shell. Then we saw a mass of thick black smoke, such as is caused by the explosion of a torpedo head loaded with melinite. When this had cleared away, our searchlights could not discover anything of the destroyer. Possibly she had sunk. The others escaped.

I say "possibly," and dare not state it categorically. My experience of war has taught me that in a night action things often look as one would like them to look. Moreover, not one person, but many together see these things. How is this? Is it a case of self-hypnotism or hallucination *en masse*? Let experts decide. Of this fact there can be no doubt. There were examples not only on our side, but also on that of the adversary. In Port Arthur we often got copies of the *Chefoo Press*. Chinese who ran the blockade in their junks brought them. In this paper, during June and July, we read three times: "The *Diana* has been sunk in consequence of a successful torpedo attack." One picture of our foundering was described with much detail. I am sure that the commanders of the Japanese destroyers did not render their superiors any reports which were intentionally false. They certainly did not do so for the simple reason that their superiors were able to verify the reports by their spies, if not the next day, certainly in three days. It is certain that not only the captains, but many men of the crews of these destroyers, firmly believed that they had three times been eye-witnesses of the foundering of the *Diana*.

However, I have digressed from the course of events.

On 12th July the *Pallada* took up our billet in the roads. We went to that of the guard-ship in the entrance.

On 13th July the Japanese tried for the first time to interfere with the work of our mine-sweeping flotilla. Towards 1 p.m., at a distance of 4 miles from the shore, it was fired upon by five hostile destroyers. These helpless steamers had, of course, to cast off their lines and return to the protection of the coast batteries and guard-ships. A few rounds from the *Pallada* and *Bobr* sufficed to cool the ardour of the Japanese destroyers and to drive them to a considerable distance.

During the night of 14th July the Japanese attacked the *Pallada* with destroyers, but without success. This was their last attempt to sink the cruiser on guard. They had satisfied themselves that these attempts were useless, and costly to themselves, and in future only appeared in the roads at night to lay mines.

Of course we also learnt something from our bitter experiences, and adopted Japanese methods. We fitted our destroyers for the purpose, and then sent them out at night to strew mines where the blockading ships were in the habit of cruising about by day. This, of course, did not remain unknown to our energetic and alert opponents. They at once commenced a systematic search of the waters where we had laid our mines outside the range of our coast batteries and guardships.

Such cases as occurred on 13th July, when our mine-sweeping craft were attacked by the enemy with impunity, had to be prevented. In future this flotilla was only sent out under a convoy of two or three gun-boats and a destroyer flotilla. The Japanese did the same. Consequently, during the whole of July, people on shore were daily able to witness a strange, almost ludicrous spectacle. Our mine-sweeping flotilla searched for the mines which had been laid by the Japanese. In their wake, where everything had been cleared, came the gun-boats. To seaward of this procession were our destroyers. Then came an empty space of 15 or 20 cables [3,000 to 4,000 yards], and beyond this the Japanese destroyers, out of range of the batteries and guard-ships. Still further out the Japanese mine-sweeping craft were looking for the mines we had placed, and with them were the gun-boats and small cruisers protecting them. Sometimes the destroyers got bored and approached one another somewhat nearer. Then they commenced firing at one another at long range (for their guns). But it never developed into a regular fight. They soon separated again. Sometimes the Japanese destroyers showed "cheek." Under the belief that either the *Askold, Pallada,* or *Diana* were in the roads, they would carelessly approach the guard-ship up to 55 to 60 cables [11,000 to 12,000 yards]. Suddenly they discovered that it was the *Bayan,* which was sending them a few segment shell from her 8-inch guns. Then all was confusion and hasty retreat. On board the guard-ship people laughed and joked, for this was always a little change.

The order in which the ships went on guard was now suddenly changed. On 15th July the *Pallada* was to have relieved us in the entrance. But she had urgent defects and went into the West Basin. We remained out. On the 18th we again for some reason could not get a relief. On the 22nd we took over the guard duties in the road, where we remained, not three times, but four times twenty-four hours.

During these days (especially between 19th and 25th July) we had almost incessant rain, fog, and thunderstorms. It was only during rare and short intervals that the weather became tolerable.

On 21st July our destroyers, fourteen in number, went out on some night enterprise. Why and whither remained unknown to us.

On 22nd July, at 10.45 p.m., our searchlights discovered a Chinese junk. She was coming from seaward, and making

straight for the roads and the entrance with great boldness. We opened fire. The junk obstinately continued her course for some time. Then she turned off and ran on a rocky reef projecting from Golden Hill (Lutin Rock). Towards 2 a.m. several destroyers appeared for a moment. They disappeared as quickly when our batteries opened fire on them.

On 23rd July the admiral commanding the cruisers came on board the *Diana*. He shouted at us, and rated us roundly. He said we had fired on the junk which was bringing us a mail from Chefoo. It was quite clear that if this junk had been expected she should have been furnished with recognition signals. Moreover, our superiors ought to have informed us, the cruiser on guard, that such a craft was expected. Without this we were fully justified in not allowing the junk to approach us within torpedo range, or to enter the harbour. Might this not be a Japanese *ruse de guerre*? Might not the junk have carried some apparatus for launching a torpedo? Possibly she was herself a gigantic mine laden with hundredweights of melinite or shimose. Naturally every officer could listen to our Admiral and say to himself: "Jupiter, thou art angry, therefore thou art in the wrong." There was no need for any one to take his thunder to heart. I might even have omitted this episode, as it does not offer the reader anything of special interest. But there was another point in connection with this. I was aghast at the indifference, not merely calm, but contemptuous, with which this unmerited censure of our superior was met. He was, as it were, talking into space, without reaching anyone.

At breakfast one of the sub-lieutenants referred to the injustice of the treatment we had received, and said that the man who was censuring us had been in the wrong himself. He was at once silenced by a sharp remark of his neighbour. The latter merely said: "Be quiet! it is not worth talking about. What else can we expect?" There was silence all round, and I suddenly realised that the second in command had a far more important and difficult duty to perform here than the mere outward one of maintaining order on board with all means at his disposal. I suddenly remembered a number of incidents to which, absorbed by the multitude of my duties, I had at the time not attached any significance. Once, for instance, being anxious to raise the spirits of the men, I began mentioning the rumours that it was intended taking the squadron to sea to fight a decisive battle. These rumours, which were just then going their rounds in the squadron, had originated with the chief of the staff. It was said that we had only returned on 24th June on account of the *Sebastopol's* leak, that the repairs were going on apace, and that as soon as they were completed we were to offer battle to the enemy. No one had contradicted me. But when I had finished, my neighbour said quite softly, as if it were to himself: "What is the good of talking about it? Do you really believe this yourself?"—Another time I had come into the mess unexpectedly, and overheard a fragment of conver-

sation. Someone was just saying: "Why should we ask him? Of course he will talk us over. His views on the service and on our duty demand this. He himself. . . ." On my appearance the conversation was suddenly broken off. Now I understood everything. It was I who was meant. I remembered many another thing, all trivialities, but symptomatic.

Yes, there was no longer any doubt possible. My messmates avoided discussing the events of the war with me (as they thought that I was not open with them). And that on board the *Diana*, in our mess, hitherto so harmonious and united! The war had made us friends, but this friendship was not proof in the case of a "superior." And I was one of their "superiors."

Should I try and speak quite openly with my messmates? Might I forget my duty to maintain the prestige of leadership by all possible means? I should have done this, had I spoken of all that lay heavy on my heart. If I wanted to maintain my popularity I should have to begin by criticising all orders received. But that would have been useless. I should only have demoralised people still more without effecting any change in the orders. Beside which I should anyhow not have gained my object—their "superior" I remained. Instead, I should have lost their esteem, and this was what I valued most, and which could be of some service to us in action.

I saw before my eyes a picture of utter demoralisation. Of discipline there only remained the outer forms. Its real basis, belief in the superiors, was gone. But it was this belief alone which could guarantee obedience, self-denial, self-sacrifice—in a word, success. The tone amongst the officers was bound to influence to some extent that of the men. What did all this mean for the future?—History has answered.

During the last days of the siege about 9,000 men fit for work were counted in our positions. When the fortress was surrendered the Japanese made 23,000 prisoners, not counting sick and wounded. They were all soldiers, and were in good health.

I was no prophet, and could not predict all this. But now that I was oppressed by all these sad thoughts, I could not help recalling a conversation of the early days of the war.

We were speaking of the surprise attack by the Japanese.

"We have been betrayed," said the gentleman with whom I was talking.

"Indeed? And what is your idea of the matter?" I replied. "Do you believe that the Japanese have bribed some one?"

"It is all one," he urged. "Perhaps the cause is bribery, perhaps personal guilt, malice, our imagination, or simple stupidity."

It may be that I was wrong, but I was under the belief that this line of reasoning—though not so bluntly put—was gaining more and more ground. This reticence, this taciturnity, this reserve of the officers when in the presence of their superiors, was only too eloquent.

On 24th July, at 3 a.m., we in the *Diana*—she was on guard—heard guns to the eastward. It appeared to come from Taché Bay, where the destroyers *Boyevoy, Grosovoy, and Lieutenant Burakoff* were patrolling. On account of the weather—fog and drizzle—we could see nothing. At daylight everything was cleared up. This night action had ended very sadly for us. Japanese destroyers, torpedo-boats, or more probably steam launches armed with torpedoes, had made use of the favourable weather, and had penetrated into Taché Bay at low water. Our land patrol had not noticed anything. The Japanese then attacked our vessels from the shore side, from where they had not expected any attack. The *Grosovoy* was not hurt, but the *Boyevoy* was much damaged. Her foremost stokehold was blown up. But the worst was that the *Burakoff*, our only fast boat, was blown nearly in two and sunk. With her we lost the only half-way reliable means of getting into communication with the Commander-in-Chief *via* Niu-chwang.

In the morning of 24th July everything which could be procured in Port Arthur in the shape of salvage appliances was sent to Taché Bay, escorted by the *Novik*, the gun-boats, and destroyers. Towards eight o'clock the *Boyevoy* was towed past us stern first. The hole had been covered with collision mats. The salving of the *Burakoff* was quite hopeless. No sooner was the procession in the harbour than a fog came on as thick as milk. On 25th July we were at last relieved. When we reached the West Basin we looked forward to our time there as to paradise. The deck hands who had been all the time in "watch and watch" wanted a thorough rest. The engine-room staff had also had strenuous times, as the ship had to be kept under steam all the time. Besides, all the engines and boilers required a good overhaul. But all this came to nought. Early on 26th July the signal was made: "*Retvisan*, all cruisers and destroyers raise steam."

The engineers had just commenced opening up the machinery. They were taken unawares, but one must do them the justice to say that they were equal to the occasion. We were only half an hour behindhand in getting to sea. When we reached the roads at 1.30 p.m. the *Askold, Bayan*, and *Pallada* were already at anchor with nets out. The weather was hardly promising for an expedition. From time to time it rained so hard that our range of vision was reduced to one or two miles. The senior officer of these ships apparently thought the same. Before we had time to take up our berth he signalled to us: "Proceed into port." We turned round, and as we steamed in the other ships were taking in their nets. We had just secured to our buoys in the West Basin when it cleared up. The cruisers which had just weighed to come in, were ordered by signal from Golden Hill to proceed to Lunwantung and bombard the hostile positions.

For us this appeared to be an insult. We were despised, and were not to join in this. Our captain at once went to see the

Admiral and to ask for an explanation. He came back quite satisfied, and said that our going out at all was due to a misunderstanding. We were to have two days of complete rest, and overhaul our machinery and boilers. It was a fact that by force of circumstances throughout the last month the *Diana* had hardly had a day in peace. We had either been out in the roads or in the entrance. We had hardly gone up harbour when the despatch of all the cruisers had been decided upon. We were so weary that we looked upon the new order as an act of grace, and did not at all envy our comrades the laurels they might pluck meanwhile.

These were hard times indeed.

On 26th July the Japanese attacked our positions along the whole line. Their gun-boats and light cruisers supported them from seaward on both flanks. Our troops fell back before the enemy's first attack. It was said that owing to some misunderstanding, some of our positions had been evacuated almost without fighting. When the *Askold*, *Bayan*, and *Pallada* appeared and had chased away the small Japanese vessels which had been harassing our right wing, the situation changed. Fortune had apparently favoured us again. The *Bayan* succeeded during the long-range engagement in hitting the *Itsukushima* with an 8-inch shell. One of the Japanese destroyers was apparently also hit, and beat a hasty retreat. The cruiser *Tchiyoda* struck a mine. She did not sink, but was towed back to Talienwan in a dangerous condition. (She was repaired in the dock at Dalny.)

Our cruisers returned about 7.30 p.m. Semi-officially we were informed that all positions which had at first been evacuated were again in our hands.

All night long we heard the dull roar of guns from the land front. At daylight it increased in intensity. The rain had ceased and the fog lifted. At six o'clock on the morning of 27th July our gun-boats, the cruisers, and the *Retvisan* went out in support of our army. The Japanese attacked with fresh troops, but our people were so encouraged by yesterday's successes that they did not give way. Towards 11 a.m. the *Retvisan's* 12-inch guns began to speak. Their mighty roar drowned the whole din of battle. How glad we were to hear them! Our most fervid vows accompanied each round fired by the *Retvisan*.

On our right wing, which was supported from seaward, the situation was not so bad. On the other hand, the accounts from the left wing were not good. Opposite to Itchenza, where we had twenty-four field guns, the Japanese had got eighty into position. Moreover, the enemy was supported from seaward by his gun-boats. All ships landed their doctors and stretcher parties. Soon after noon the firing ceased. Towards three o'clock our ships returned to the roads, and came up harbour in the evening. At seven o'clock our neighbour, the *Bayan*, came to her berth in the West Basin. Even our experienced eyes did not notice at once that she was down by the bows, and had been damaged. Later we heard that just as the *Bayan* had reached

the roads, she had struck a mine. Her water-tight bulkheads had stood, only the foremost stokehold was flooded. All the same, our only armoured cruiser was *hors-de-combat*.

"This is a further reason for our not going to sea. We must now wait until the *Bayan* is repaired."

I turned round to face the speaker, and had difficulty in restraining myself.

"You seem pleased at our misfortunes. Do you still dare to mock?"

He looked at me steadily with his grey eyes, half-respectfully, half-mockingly.

"By no means. I am only trying to discover at once the motive which will probably influence our leaders in their orders."

On 27th July the *Diana* suffered a severe loss in the person of Korostyeleff, the constructor attached to the ship, who had to be sent to hospital.

Korostyeleff was an indefatigable worker, and a first-rate engineer. He possessed thorough scientific training, and a rich practical experience. Whilst the cruiser was being built he was employed in the dockyard. In the mess the standing joke about him was that he was "personally acquainted" with every rivet in the ship. For the captain and executive officer he was more than the right hand. Korostyeleff had a fine presence, and at first sight he looked healthy. But the doctors said that he suffered from the heart and the nerves. The six months of war had had a bad effect on his health. He died in hospital at 1.30 a.m. on 28th July. His end was so calm and peaceful that the nursing sister on duty did not at once notice it.

Next day was the solemn funeral.

"My God!" thought I, "yet another bloodless victim of the war! How many fall thus without our knowing it?"

During the night of 28th July our troops fell back all along the line.

In the morning an immediate attack by the enemy was evidently expected. All ships were ordered to disembark landing parties. During the afternoon they were re-embarked.

Arrangements had been made "from above" to ensure that no news of the operations of the army could reach the garrison. Notwithstanding this, the news penetrated everywhere, into the town, into the fortress, into the squadron—by means of Chinese. We had quite accurate details about our failure at Va-fan-gu, and already on 15th July the rear-guard action of Haitchen was spoken of. Then came Tashichao, that is, the evacuation of Niu-chwang.

Hopes of any success on land became mere pious aspirations. On the other hand, a very decided rumour gained ground to the effect that a second squadron was being fitted out at Cronstadt, and that it might start any day. We did not quite believe this rumour. The sceptics said that we did not possess another

"squadron," that it was possible to get together in a relatively short time a number of ships, both new ones and old ones reconstructed, but much time would be required to turn them into a "squadron." Only a homogeneous, well-drilled, well-organised squadron should be sent out. If any one imagined that a badly-organised "armada" would do as well—why it would hardly get as far as Port Arthur!

A small number of optimists tried to represent the situation more favourably: "It will take two or three months to collect the new squadron in the home ports," they said. "During that time something can be learnt; the remainder can be acquired on the way out."—"Indeed," was the reply. "A retriever cannot be trained on the way to a shoot. No; the Japanese have been training their squadron for eight years, without stinting the cost of keeping it in full commission. We have seen the results. Do you remember what Makaroff says in one of his books?—'One cannot hope to carry out in war anything which has not been learnt in peace.'"

I believe (I may be wrong) that there was no faith in our administration. The majority were of opinion that these rumours of a prospective arrival of a second squadron were chiefly intended as an excuse for our inactivity. They were to make us believe that we were saving up the ships against the arrival of the expected reinforcements. All this was not put forward openly, but one "read it between the lines" during all conversations.

"As soon as they begin to bombard us from the land side it will be all up with our squadron. The second squadron cannot arrive in any case before this happens. We must not shut our eyes to this danger. The fate of Port Arthur is sealed. If we want to save the squadron we must go to Vladivostock. If not we must risk annihilation in action, and at the same time cause the enemy as much damage as possible. It is criminal to leave the ships here to be pounded to pieces by the shore guns."

Many thought thus.

On 29th July, or during the night of the 30th (I can't say for certain, for in these times we simply lived on rumours), our troops evacuated the Green Hills, Takushan, and the Wolf Hills. The latter were given up almost without a struggle. All the same, we had some losses. It was said that they were caused by the Japanese firing into our flank during our retreat, causing much confusion in our ranks.

The real siege of the fortress may be counted as commencing on 30th July. From morning until 2 p.m. of that day the *Retvisan*, *Peresviet*, and *Pobieda* bombarded by indirect fire the valley of Lun-ho, in which the enemy were specially active.

The night of 31st July was disturbed. In the evening we got the signal: "Keep cleared for action during the night.—Landing parties to be kept ready—The battleships will open fire at daybreak.—*Novik*, gun-boats, and destroyers are to go out at 6 a.m.," etc.

The Japanese, however, did not attack, perhaps on account of the weather. We had almost incessant rain and fog.

On 1st August we were again guard-ship in the roads.

When the weather was particularly bad, one could hear strange remarks in the mess. The officers did not address me directly, but they "sounded," so to speak, by expressing their ideas in my presence. It was thus said that we should clear out of this place. That we should seize the opportunity when we could not be seen either from the shore or the sea, cast off from the buoys and break out to Vladivostock. If we are then annihilated, said some of them, well then we *are* annihilated. If, on the other hand, we do get through to Vladivostock, we can get new guns for the old ones, and then we shall still be good for something. Here we should simply be made prizes of.

Sometimes I pretended not to hear any of this, but occasionally I had to cry halt. I declared that if we did this, we should be deserting our post like a sentry. The admiral commanding the squadron was in a better position to judge of all the circumstances than we. If he did not go out he had his reasons. At a given moment the Admiral required all our forces for the decisive battle, every gun would then be of great value. No one contradicted me, but I felt and saw that the officers did not believe my words as to a decisive battle. As regarded the "great value of every gun," I received the laconic reply: "Except, of course, those we have sent on shore."

Yes, demoralisation was in full swing.

In these days a quite new and very sad defect showed itself in connection with our gun armament.

On one occasion when we were firing as usual at Japanese destroyers one of our 6-inch guns suddenly ceased firing. "What's the matter?" the captain shouted furiously, when he saw that the gun was being unloaded from the muzzle. "Has the cartridge again not been examined and fallen to pieces?"

"No, sir, it is not the cartridge," reported the officer in charge excitedly from the upper deck. "It is much worse! We can't get the projectile far enough in."

The following facts were then elicited. Ammunition had been sent out to Port Arthur in great haste, as it seemed likely that the communications of the fortress with the north might be cut off. In consequence of this a large batch of shell had not been examined at all, or only in part.

Of course the department making the issue could quote paragraph 527 of the instructions. These provide that the gunnery lieutenant is to stop the issue and report to the captain if any articles are found not to correspond exactly with the sealed pattern. With equal force the gunnery lieutenant could point out that he was unable to do this; that he was without any means, and, above all, lacked the requisite time for careful examination of all stores we drew from the local depots to fill up our deficiencies. The storekeepers at Port Arthur, again, were quite in their right when they maintained that they had received these shell

from the factory and the central department at home, and that they also lacked means and time for gauging. In short, as usual, every one, that is, no one, was to blame, but the fact remained.

Our gunnery lieutenant was in great trouble over this discovery. We had always filled up our allowance of shell as they were expended. In the shell rooms the new shell had been stowed in the empty racks. It was impossible now to say which were the shell received before the war, and which were not. It was equally impossible now, in time of war, to make a careful examination of the whole of our projectiles. We could only do this by degrees, by unstowing a small number of shell at a time. We required time—but did we know how much time we still had at our disposal? That all depended on the enemy.

A further defect was discovered. I don't know whether it was in consequence of bad gauging or simply of bad metal. Our cast-iron shell (the cheapest and therefore the most numerous in our outfit) often burst on leaving the muzzle. When the *Gilyak* was firing at Japanese destrovers, and her projectiles passed close to us (when guard-ship), we afterwards frequently picked up splinters of the cast-iron shell on our decks in the morning. In the first instance, the neighbouring ships were endangered, but the gun itself could be disabled if a shell burst in the bore. Orders were therefore given to fire cast-iron shell only with practice charges (that is, half charges).

That was a sad order. We were no longer able to develop the full power of our guns. But, alas, it had to be!

On 2nd August we were directed to leave it free to such of our servants as had voluntarily enlisted to have their engagements cancelled with a view to getting away to Cheefoo by the next Chinese junk.

A sad premonitory symptom!

The Japanese were now not very active. They were probably busy building heavy siege batteries. The ships of the squadron fired at them from the basins indirectly, and tried to interfere with their work. In this way the fleet defended the fortress towards the land.

What irony!—The fleet was fighting on land!

On 4th August we were relieved in the roads and took up our berth in the entrance.

(*To be continued.*)

THE JAPANESE ARMY IN 1908.

(Translated by permission of the Minister of War from the *Revue Militaire des Armées Etrangères.*)

Continued from October JOURNAL, p. 1357.

CHAPTER III.

ARMAMENT. CLOTHING. EQUIPMENT.

Armament.

Infantry.—The Japanese infantry went through the war with the "Arisaka" rifle, model 1897. This weapon, which is an imitation of the Mauser, has a calibre of 6·5-mm. (·256-inch). It has a magazine holding 5 cartridges, and is provided with a sword bayonet.

After the war it was found necessary to renew the armament, as a great many rifles were worn out. The first idea was to introduce an automatic rifle, but after various unsuccessful trials this idea was abandoned. It was then decided to adopt a rifle still known as the Arisaka, but officially designated as the model of the 38th year of the Meiji (1905). It is, in fact, the old rifle with improvements suggested by experience gained in the war. The reserve army (*Koli*) remains armed for the present with the original weapon (model of 1897). The principal details of the new rifle are: Calibre, 6·5-mm. (·256-inch), the same as in the old rifle; length, without bayonet, 1·29 metre (4 feet 2·79 inches); the old rifle was 2 centimetres shorter; length of barrel, 82-cm., instead of 79-cm.; weight, without bayonet, 4·060 kilogrammes (a little over 8 lbs. 12 oz.). This is slightly heavier that the old rifle.

The object of the alterations has been to protect the breech mechanism against the entrance of dust and dirt, to strengthen certain parts, and to facilitate the handling of the weapon during intense cold. There has been no alteration in the bayonet.

The soldier always carries three cartridge pouches. These now open from back to front. The men are also provided with certain spare parts. The pouches hold 120 rounds, and another 80 rounds are carried in the knapsack (total, 200 on the person). When the soldier is relieved of his knapsack he is given an extra supply of ammunition. At Mukden the men of some regiments carried from 500 to 600 cartridges.

Cavalry.—The cavalry is armed with sabre and carbine. The calibre of the latter is the same as that of the infantry arm, and the new carbine has the same improvements. It is sighted to 2,000 metres instead of 1,500, and it would seem to be the intention to provide a bayonet.

General Arisaka has also invented a repeating pistol, on the same principle as the German Mauser pistol. It has an attachable stock. This pistol is carried by all officers, and by sergeants of cavalry, etc.

Field Artillery.—The Japanese artillery made the last campaign with an Arisaka field gun, capable of firing three or four rounds a minute; calibre 75-mm. (2·95-inch). It has no shields, and was not altogether satisfactory as regards stability in firing.

The mountain gun was of the same calibre, though of course much lighter. The gun and carriage separated into five pieces for transport.

Early in 1905 Messrs. Krupp received a first order for 400 75-mm. Q.F. guns. After the conclusion of peace the technical section of the War Office was on the point of concluding a fresh contract with the English firm of Vickers-Maxim for a field gun of 83-mm. (3·27-inch) calibre, weighing 1,960 kilogrammes (38½ cwt.), when the Krupp firm claimed priority, and the negotiations with the English establishment were broken off. The Japanese Government then finally adopted Krupp material for their artillery; or, to be more exact, Krupp supplies steel ingots to the Osaka arsenal, from which the guns are manufactured on Krupp's designs.

The new field gun is a long recoil quick-firer of 75-mm (2·95-inch) calibre, and is designated "Model of the 38th year of the Meiji (1905) make of 1905."

Later, in 1907, General Arisaka made some slight improvements in the Krupp gun, and the manufacture of this modified gun was commenced. It is known as the "Model of the 38th year of the Meiji make of 1907."

There are, therefore, in the Japanese Service three descriptions of 75-mm. guns, viz.: Krupp guns made in Krupp's own works; Krupp guns made at Osaka of Krupp steel on Krupp's design; and the Arisaka gun of 1907, made in the Osaka arsenal, and differing but slightly from the Krupp guns pure and simple. Of the latter (the Krupp guns) there are about 700 in Japan, and the batteries generally are armed with them. The number of Arisaka (1907) guns manufactured so far is but small.

The details of the field gun are as follows:—

Calibre, 75-mm. (2·95 inches);
Length (30 calibres), 2·192 metres (7 feet 2·39 inches);
Recoil on the cradle, 1·40 metres (4 feet 7·12 inches);
Extreme range (29° elevation), 8,500 metres (about 8,900 yards);
Initial velocity, 520 metres (1,695 f.s.);

Weight of gun and carriage, with shields, about 900 kilogrammes (say 17¾ cwt.);
Weight of projectile (both shrapnel and common shell), 6·5 kilogrammes (14·3 lbs.);
Bullets in shrapnel, 210 of 12·5 grammes (36½ to the pound);

The breech is closed by a wedge in the Krupp gun and by an interrupted screw in the Arisaka gun.

Fixed ammunition. The extraction of the cartridge case is automatically effected in opening the breech.

The proportion of common shell (high explosive) to shrapnel is 1 to 3.

The carriage is composed of two parts, the carriage proper and the top cradle. The latter carries the gun and recoils with it. Recoil is checked by a hydro-pneumatic brake. The cradle is returned to position by metallic springs in the Krupp gun, and by compressed air in the Arisaka. A spade is fixed to the trail.

The shields have a thickness of 3·6-mm. (about one-seventh of an inch), and are made in two pieces, the upper part fixed and the lower moveable.

The sight is furnished with a telescope, magnifying about three diameters. It is graduated to 6,200 metres (about 6,800 yards), but with the attached clinometer it is possible to fire at ranges up to 7,350 metres (about 8,100 yards). The fuse is graduated up to 7,900 metres (about 8,700 yards).

The limber holds 36 rounds, and can carry three gunners. Its weight, loaded and equipped, is 795 kilogrammes (about 15½ cwt.).

The weight of the gun and limber together is about 1,695 kilogrammes (33¼ cwt.).

The wagon body holds 60 rounds; the wagon and its limber together therefore carry 96 rounds.

The gun and wagon are each drawn by six horses.

The Japanese artillery officers are of opinion that a rate of fire of five rounds a minute is fully sufficient in action under ordinary circumstances, but a much quicker rate of fire can be obtained if necessary.

A field artillery regiment (6 batteries) is provided with 15 sets of telephone apparatus and 9 telemeters.

With regard to the new Arisaka *matériel*, of which only a few guns have been issued, it would seem that not only is the new *matériel* not ready, but that owing to the reductions in expenditure mentioned at the beginning of this article, its construction is likely to be considerably delayed.

The mountain gun has not been changed, though from the experience gained in the war some slight improvements have been made in the way of strengthening the *matériel* generally. A Q.F. mountain gun has, however been designed.

The heavy (field) artillery appears to be armed with 10·5-cm. guns, and howitzers of 12 and 15-cm. (approximately

4-inch, 4½-inch, and 6-inch pieces). We shall see in the chapter on the organisation of the Army how the heavy artillery is distributed.

Besides the heavy guns and howitzers accompanying the troops in the field, there will be one or more siege trains.

The 10·5-cm. (4·13-inch) gun is a new piece, due to General Arisaka, and made at the Osaka arsenal. It is a long recoil, shielded, quick-firer, and is designated the 10-cm. gun, model of the 38th year of the Meiji (1905). This gun fires a 40-lb shell, with initial velocity of 1,771 f.s., and its extreme range is 11,000 yards. The fuse is graduated to 10,340 yards. The rate of fire is about four rounds a minute. The shields are about one-fifth of an inch in thickness. The weight of the gun and carriage is 44 cwt., and it is drawn by eight horses. The wagon (carrying 36 rounds) is drawn by six horses.

The 12-cm. (4·62-inch) and 15-cm. (5·90-inch) howitzers have been partly furnished by Krupp and partly made at Osaka. The former fires a shell of 44 lbs., and is sighted to 5,680 metres (6,250 yards). The latter fires a shell of 79 lbs., and is sighted to 5,890 metres (6,480 yards). The light howitzer is drawn by six horses and the heavy howitzer by eight horses.

Siege Trains.—It is proposed to furnish these with new pieces of 21-cm. (8·27-inch); also with Colt machine guns, calibre 1·25-cm. (·492-inch), the bullets of which are capable of penetrating mantlets, sand bags, etc.

Coast Artillery Matériel.—At the present moment the armament of the coast defences is rather miscellaneous. It comprises mortars of 9, 15, and 24 centimetres; howitzers of 9, 10·5, 12, 15, and 28 centimetres, and guns of 9, 10·5, 12, 15, 19, 24, and 27 centimetres; some from Creusot, some from Krupp's works, and others made at Osaka. It has been decided, however, that eventually guns of three calibres only are to be employed. These will be: a Q.F. 15-cm. (6-inch) gun; a gun of 27-cm. (10·63-inch); and a 12-inch gun (305-mm.). All these guns will have a length of 45 calibres, and will be protected by armour plating. As a general rule the Japanese prefer disappearing mounts to armoured turrets, which are very costly and require delicate handling.

Machine Guns.—The Hotchkiss has been definitely approved of for the Army, with certain improvements suggested by the experience of the late war. The principal are:—

(*a*) The shield has been done away with; it was found to add too much to the weight in offensive movements, and to be of comparatively little value when on the defensive. In future machine guns are to obtain shelter by taking advantage of the ground, or epaulements will be hastily thrown up.

(*f*) The machine guns now being issued can be rotated on their stands through the whole circle of 360°.

(*c*) It is no longer necessary to press continuously on the stud while firing. The stud can be held back by a catch attached to a spring. The firer resumes control of the firing by disengaging the stud.

(*d*) The limit of elevation and also of depression has been increased.

The machine guns issued to cavalry and to infantry are identical. Both have tripod stands, and are carried on pack horses. Wheeled carriages for machine guns have been completely abandoned. The pack saddle carries the gun on one side, the tripod and tool box on the other. The ammunition is carried in boxes of 1,200 rounds, two on each side of a pack saddle.

Every infantry regiment is provided with a battery of six machine guns, divided into three sections of 2 guns each, and commanded by a captain or a lieutenant. Each machine gun detachment consists of a sergeant or corporal and six men. There are 24 ammunition horses to each battery. Every gun is accompanied by one ammunition horse, the remainder form a second line.

The regulations insist on the offensive character of the machine gun. These adjuncts should accompany their infantry everywhere, even into the firing line, and should always be ready to take part in the fight; but they are on no account to attempt the *rôle* of artillery.

The two independent brigades of cavalry have each a battery of eight machine guns, officered by a captain and two lieutenants, and capable of being divided into two half batteries, each of four guns. These machine guns are intended to follow the cavalry everywhere. They are a powerful auxiliary in dismounted fighting. The battery of eight machine guns has 32 ammunition horses, divided into three echelons. The method of carrying the gun and ammunition is the same as in the infantry mitrailleur batteries.

The zone of effective fire of machine guns is between 200 and 1,500 metres. At night the actual effect is evidently problematical, but the moral effect is always considerable. When hostile artillery has got the range of machine guns the regulations prescribe a change of position. The guns can be easily moved by the detachments, one man to each leg of the tripod.

Hand Grenades.—The Japanese have perfected the hand grenade, which both sides employed freely in close fighting during the late war. The grenade now in use is an iron tube about six inches in length, containing a little over three ounces of explosive. It is fitted with a percussion fuse, which explodes the grenade on striking.

Arsenals.—Japan now makes for herself almost all her requirements in the way of armament, equipment, and clothing. The principal arsenals are at Tokyo and Osaka. They are under the Commission of Arms and Munitions of War at Tokyo.

The Tokyo arsenal is principally engaged in the manufacture of small arms. The Japanese service rifle is the invention of General Arisaka, President of the Artillery Committee, who went through a course of study at Spandau. Tokyo also makes swords and bayonets, cartridges (10,000 a day), tools, cooking utensils, bicycles, etc. The powder mills of Itabashi and of Meguro, which make cordite and a powder resembling the French "powder B," are attached to the Tokyo arsenal. There is also an establishment for making the high explosive "Shimose" in the island of Shinragawo.

The Osaka arsenal makes guns and gun ammunition. In the manufacture of the former steel ingots from the Krupp and Creusot works are largely employed. The Osaka arsenal also makes gun carriages and wagons, wagons for the engineer service, torpedoes and torpedo-tubes, and the machines used in the various factories.

The powder mills and explosives factory at Uji are attached to the Osaka arsenal, as are also the establishment for the repair of small arms and the saddlery and bootmaking establishments, all at Moji.

Clothing.

The experience gained in the late war has caused the Japanese to make certain changes in the clothing of their soldiers. In future the clothing of non-commissioned officers and men, and of officers in field service dress, will be khaki-coloured; of cloth in winter and of linen in summer. The dress comprises: a cap (the shape has been altered; the new cap is not unlike that of the Russians); a loose tunic with pockets and one row of buttons; an overcoat with pockets and a detachable hood; breeches or trousers; ankle boots and putties. The badges of rank are on the shoulder straps; the regimental numbers on the collar tabs. The field service dress of the officers closely resembles that of the men. They continue, however, to wear their old dark uniforms in full dress and in ordinary undress, at least for the present. The cloth used in the Army is made in a special factory under the War Office.

Equipment.

The Japanese knapsack is like the old French knapsack, being covered with cowskin, hair outwards, on a light wooden frame. It weighs, empty, about 4½ lbs. The necessaries carried in the pack include a change of linen, housewife, etc. Two days' rations, consisting of six packets of rice, two tins of preserved meat, sugar and tea, are also carried. Further, each man has 80 cartridges in his knapsack, besides the 120 in his pouches. The field blanket is rolled round the knapsack with a shoe on each side. The overcoat and portion of the tent canvas are rolled up beneath. The entrenching tool is fastened below or on one side.

When going into action the men leave their packs behind, the entrenching tool being then transferred to the belt, in front of the bayonet. The mess tin, of aluminium, slightly curved, and having a capacity of rather more than three pints, is fastened to the back of the knapsack.

The knapsack, packed, with the entrenching tool, weighs about 31 lbs.

The soldier carries besides: An aluminium drinking vessel, a packet of "first-aid" dressing, two wicker baskets containing one day's rations (except biscuit), and also a haversack. The latter contains an aluminium quart pot, the biscuit ration, a bottle of medicine, soap, towel, tooth brush and powder, pipe and tobacco, paper, etc.

The belt, of brown leather, supports three pouches containing 120 rounds of ammunition.

The total weight ordinarily carried by the Japanese soldier, including clothing, equipment, arms, ammunition, and food, amounts to:—

Winter kit—68 to 70 lbs. (without extra cartridges, 66 lbs.).
Summer kit—66 lbs. (without tent canvas, 62½ lbs.).

This burden is no trifle, and to lighten the soldier when fighting, the kit is reduced to what is absolutely necessary, that is to say, rations, ammunition, change of linen, soap, etc. These are carried in a long bag of khaki cotton called *seoi fukuro*, which is passed over the right shoulder and under the left arm, the ends being knotted on the chest. The mess tin is either inside or attached below. The entrenching tool is placed in the waist-belt, and the overcoat, rolled in the tent canvas, is carried over the left shoulder, crossing the *seoi fukuro*. The knapsack is left behind or brought along on the baggage wagons. The total weight of the reduced equipment is about 55½ lbs. with winter clothing, and about 42½ lbs. with summer clothing.

Entrenching Tools.—The entrenching tools carried by the Japanese soldiers are much the same as those used in the French Army. Every infantry soldier carries a tool of some kind, the proportion being two-thirds shovels to one-third picks, hatchets, and saws. The very extensive use made of wire entanglements by the Russians induced the Japanese to distribute no less than 30 clippers among the men of each company. The fact of having been chosen to carry one of these clippers was considered to be equivalent to a certificate of daring.

The following full-sized entrenching tools are carried as a reserve on pack animals, as part of the *train du combat*, viz., 43 shovels, 16 picks, 8 axes; total 72.

Cavalry have 12 or 16 hatchets and jointed saws per squadron, carried by the men.

The engineers have 215 entrenching tools per company, carried by the men, and a reserve of 148 per company in the engineer park.

The artillery are provided with 85 tools per battery.

Field Kitchens.—Cooking utensils are carried by the regimental train on pack animals. In Manchuria the troops also made use of all the cooking utensils they could find in the farms and Chinese houses. Each company also possesses a cooking equipment consisting of a portable stove (or cooking range), with a caldron and other accessories. The whole can be carried on two horses. The caldron has a capacity of nearly 12 gallons, and weighs about 37½ lbs. A battalion has four complete cooking equipments, carried on 10 horses, of which 2 are for additional caldrons. A squadron of cavalry and a battery of artillery have each one complete equipment carried on 2 horses. The cooking equipments can also be carried on carts, two to a cart.

(To be continued.)

IMPENDING WAR.

(*Résumé* of an article appearing in the Russian military journal *Razviedchik*, of 3rd August, 1909.)

Contributed by the General Staff.

NO military man who studies contemporary events, can have much doubt that the Russian withdrawal in the Servian question has made war more imminent than it was before, rather than the reverse. Russia at present stands upon that slippery slope of concession which leads to war. She does not desire war, and is not prepared for it, and Heaven alone knows when her army will attain the ideal standard of excellence set before it in the press, etc. Neither do our neighbours desire it, if only on account of the enormous sacrifices in men and money, exacted by modern war. If to that consideration we add the chances of an unfavourable result, and (leaving moral considerations on one side) evaluate the purely strategic elements of the situation, we find the net result to be very far from favourable to those neighbours of ours.

Even granting that the Germans have better armament, equipment, training, etc., these are, after all, only means to an end, whereas the end itself is such as to overwhelm any enemy. What is the use of elaborate means if the end in view be unattainable?

War is no longer a duel between armies, but a life and death struggle between nations. Nothing short of paralysing the whole life of a country (to such an extent that any prolongation of it implies national death) constitutes final victory.

Owing to the vast extent of Russian territory, the country's material resources for defence are almost infinite. The normal life of Russia as a whole would not be affected by the loss of any of her frontier provinces. An army could, no doubt, advance into the interior of the country, but the result of such a proceeding (in view of the enormous size of modern armies and their extreme sensitiveness as to their communications) would be even more disastrous than in times gone by. And what would be the object of such a march? The occupation of any particular point is of no strategic importance in itself, unless the national life is thereby paralysed. It is impossible to believe that Germany can seriously contemplate an invasion of Russia.

If St. Petersburg were occupied by the Germans, or Kiev by the Austrians, other parts of Russia, so far from being affected as to their productive powers and resources, would hardly be aware of the fact. Russia is so vast. But if it is

impossible to imagine a given moment when Russia would be exhausted, it is far otherwise in the case of Germany and Austria. The inference is, therefore, that in any future war, Russia would risk comparatively little while her opponents would be staking their national existence.

There has lately been a great outcry in the press, and attention has been called to various weak points, the fortification question, etc. Even General Kuropatkin's demonstration that 100,000 men could be concentrated within a week, for the defence of St. Petersburg, does not satisfy a correspondent of the *Novoe Vremya*. We will not discuss the point as to the possibility or otherwise of the Russian capital being occupied by the Germans, but confine ourselves to pointing out that the effect of their doing so would be comparatively unimportant.

The march of 150,000-200,000 German troops upon St. Petersburg, would be of no strategic importance whatever, apart from the voluntary dispersion of force. The occupation of the capital would have little or no effect upon the rest of the country, and least of all upon an undefeated army in the field, based upon Moscow or some other point. The more German troops there were in St. Petersburg, the fewer there would be at *the decisive point*. If beaten in the field, they would quit St. Petersburg fast enough. Even a successful war calls for sacrifices, and heavy ones; but it would be no great matter if the Germans chose to spend a summer in St. Petersburg, or at the watering places in Finland.

If we now turn to the moral side of the question, everything will depend upon firm determination in high quarters. The Russian army is a good one, and when fighting for its home country will achieve far more than was the case during the recent war. There is reason to believe that the strong points of the Russian army are fully appreciated in Germany—even among violent Russo-phobes. There are some general officers in the Russian army, to whom the command could safely be entrusted, and under whom others would soon learn the art of victory—as was the case with Suvorov and his generals.

An important question is that of fortresses, and the part they are to play in a future war. The advocates of fortification point to the achievements of Sevastopol, Plevna, Port Arthur, and other fortresses, and frequent mention is made of armed camps as bases of manœuvre. But there is no fortress which cannot be turned, while experience shows that a force occupying a fortress becomes stationary and is lost for the purposes of operations in the field. If General Kuropatkin, instead of locking up a whole army corps in Port Arthur, had concentrated the whole of his forces against Kuroki, there might have been no Wa-fang-kou, no Liao-yang, no Mukden. The largest and best modern fortresses may never be attacked, their fate being decided elsewhere—in the field. The fortifications in the neighbourhood of Warsaw can only be of importance with regard to a sudden attack. But if, instead, Poland were invaded by, say,

two German armies, from the west and north-west, and by an Austrian army from the south-west, those fortifications would not only be useless but positively detrimental, owing to the dispersion of troops caused thereby. Would it not be better to fall back in good time, and husband our forces? A hostile occupation of a few Russian provinces (which could not, in any case be prevented) is less serious than exposing the Russian army to the attack of an enemy in superior force.

In connection with this point, mention must be made of the great importance of the extensive *Polies* district, which, from its position, forms a wedge driven into the theatre of any operations on the western frontier of Russia. The sides of this wedge approximately coincide with the two main roads Moscow-Brest (Litovsk) and Kiev-Brest (Litovsk). Though little attention has been paid to this neighbourhood in the past, it might easily become of the first importance. Owing to the swampy soil, its wooded character, and sparse population, the *Polies* district can only be traversed by a few narrow roads, and is quite impassable for an army. Any invading force, on reaching Brest (Litovsk), would have to take either a north-easterly direction towards Moscow, or a south-easterly direction towards Kiev, or both at once. In any case, an advancing force would be exposed for nearly a couple of hundred miles to attacks upon its flanks within the *Polies* district. It would not be difficult to convert the country referred to into an effective base for Russian operations, though still inaccessible to an enemy. The railways are almost sufficient already; all that would be necessary is to improve the country roads, and establish a number of supply depôts. In fact, the district in question (which forms a sort of barrier between what would be the northern and southern theatres of operations) would constitute an admirable base for a small army operating within it, and capable of being rapidly transferred from one theatre to the other—at the decisive moment.

We have nothing to fear from an enemy—only from our own lack of spirit. War is at hand, and it is useless to attempt to postpone it by a peace-at-any-price attitude. It is not within our power to prevent a rupture; the only thing is to prepare for it, and to be ready for war at any moment.

NAVAL NOTES.

Home. The following are the principal appointments which have been made: Rear-Admiral— F. E. Brock to Command of the Third (Portsmouth) Division of the Home Fleet. Captains—C. W. Winnington-Ingram to "Argonaut," for charge of special service vessels, Portsmouth; M. R. Hill to "Hawke"; S. St. J. Farquhar to "Kent"; G. R. A. Grant to "Niobe"; F. D. Gilpin-Brown to "Jupiter"; R. E. Benson to "Hermione"; H. D. Wilkin, D.S.O., to "Antrim."

The first-class armoured cruiser *Inflexible*, flying the Union flag of Admiral of the Fleet Sir E. H. Seymour, G.C.B., O.M., G.C.V.O., arrived at Spithead on the evening of the 18th ult., from attending the Hudson-Fulton Commemoration at New York; Sir E. Seymour struck his flag at sunset on the 19th, and the *Inflexible* has rejoined the First Cruiser Squadron.

The first-class battleship *Venerable* commissioned on the 19th ult. for service with the Atlantic Fleet, where she has relieved the *Cornwallis*, which in her turn has joined the Mediterranean Fleet, relieving the *Canopus*, the last-named ship being ordered to return to England. The first-class battleship *Hindustan* paid off at Portsmouth on the 4th ult., and recommissioned the following day for a further term of service with the 2nd Division of the Home Fleet.

Launches.—On the 28th ult. the launch of the first-class armoured cruiser *Indefatigable* took place at Devonport. The *Indefatigable* is the fourth of the so-called *Dreadnought* cruisers to take the water, having been laid down on 23rd February this year, and in the eight intervening months nearly 7,000 tons of material have been built into her. Her exact dimensions have not been published, but they are believed to be as follows: Length, 600 feet; beam, 80 feet; mean draught, 26 feet 5 inches on a displacement of 19,000 tons, as against the 17,250 tons of the three earlier ships. Her engines are to develop 45,000-I.H.P., to give a speed of 25 knots, with a coal capacity of 2,500 tons. The armour belt is believed to be 8 inches, as against 7 inches of the earlier ships, while the armament will consist of eight 45-calibre 12-inch guns, with a secondary armament of twenty 4-inch guns, although according to some reports her secondary battery will be composed of 6-inch guns.

On the 28th ult. also took place the launch of the second-class cruiser *Gloucester* from the yard of Messrs. Beardmore, at Dalmuir-on-Clyde, and on the 30th ult., from Messrs. Vickers' yard at Barrow, that of the second-class cruiser *Liverpool*. Both of these vessels belong to the new "City" class, their dimensions being as follows: Length, 453 feet; beam, 47 feet; mean draught, 15 feet 3 inches, with a displacement of 4,820 tons. The

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armament will consist of two 6-inch and ten 4-inch Q.F. guns, with two 18-inch submerged torpedo-tubes on the broadside. Their Parsons turbine engines are to develop 22,000-I.H.P., to give a speed of 25 knots. For protection there will be a curved steel protective deck extending the whole length of the ship, while the coal bunkers are also arranged to give further protection to the machinery.

The Dilke Return of British and Foreign Fleets.—The "Dilke Return" [Parliamentary Paper, No. 277], "showing the Fleets of Great Britain, France, Russia, Germany, Italy, United States of America, and Japan, which want of space has prevented our giving an abstract of earlier, is in the customary form.

The following explanatory note is attached :—

"1. This Return shows all battleships and armoured cruisers of each Navy which have been launched since 31st March, 1889; in the case of other classes all vessels are shown which still retain their armaments, and are not for sale. A fair comparison between the older vessels of each Power may be obtained by reference to their respective ages, displacements, armaments, etc.

"2. Vessels are arranged in classes as follows :—

Battleships.
Coast-defence vessels (armoured).
Cruisers (armoured).
Cruisers (protected), 1st class.
Cruisers (protected), 2nd class.
Cruisers (protected), 3rd class.
Cruisers (unprotected).
Scouts.
Torpedo vessels.
Torpedo boat destroyers.
Torpedo boats.
Submarines.

"3. Vessels built are shown separately from those building, and vessels are not transferred from the "building" to the "built" section until they have completed their trials and are ready for commissioning.

"4. In each class, vessels are arranged in types, the latest designed type being placed first in the case of those built, and last in the case of those building.

"5. A nominal table prefaces each class.

"6. In the column headed "horse-power," the figures are to be taken as representing maximum I.H.P. (= indicated horse-power) except where they are followed by the letter T, which indicates that turbine machinery is fitted."

The following is a summary of the different classes of ships :—

Battleships.—Great Britain, 53 built, 6 building; France, 18 built (including 1 condemned), 6 building; Russia, 7 built, 8 building; Germany, 32 built, 10 building; Italy, 10 built, 1 building; United States, 26 built, 6 building; Japan, 14 built, 4 building.

Coast-defence Vessels.—Great Britain, *nil*; France, 10; Russia, 2, Germany, 11; Italy, *nil*; United States, 11. None building.

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Armoured Cruisers.—Great Britain, 38 built, 1 building; France, 20 built, 2 building; Russia, 4 built, 2 building; Germany, 8 built, 4 building; Italy, 7 built, 3 building; United States, 15 built; Japan, 11 built, 2 building.

Protected Cruisers (*First-class*).—Great Britain, 18; France, 5; Russia, 7; Germany and Italy, *nil*; United States, 3; Japan, 2. None building. Second-class.—Great Britain, 38 built, 5 building; France, 12 built; Russia, 2 built; Germany, 21 built, 7 building; Italy, 4 built; United States, 16 built; Japan, 10 built, 1 building. Third-class.—Great Britain, 16; France, 11 (including 1 condemned); Russia, 2; Germany, 12; Italy, 12; United States, 2; Japan, 8. None building.

Unprotected Cruisers.—Great Britain, 2 building; Russia, 2 built; Germany, 11 built; Italy, *nil*; United States, 10 built; Japan, 7 built.

Scouts.—Great Britain, 8 built; United States, 3 built; other Navies, *nil*.

Torpedo Vessels.—Great Britain, 18, depôt ships for destroyers 3, depôt ships for submarines 2; France, 12 (including 1 to be condemned and 1 special service vessel); Russia, 6; Germany, 1; Italy, 5; United States, 2; Japan, 1, and 1 depôt ship for submarines. None building.

Destroyers.—Great Britain, 146 built, 25 building; France, 56 built, 16 building; Russia, 97 built, *nil* building; Germany, 73 built, 13 building; Italy, 17 built, *nil* building; United States, 20 built, 15 building; Japan, 55 built, 3 building.

Torpedo Boats (*Formerly Coastal Destroyers*).—Great Britain, 30 built, 6 building. General List.—Great Britain, 80; France, 262; Russia, 84; Germany, 83; Italy, 109; United States, 30; Japan, 69. Building, *nil*.

Submarines.—Great Britain, 45 built, 23 building; France, 49 built, 49 building (of which 24 are not yet actually commenced); Russia, 24 built, 11 building; Germany, 4 built, 4 building; Italy, 7 built, 2 building; United States, 12 built, 16 building; Japan, 8 built; 2 building.

France. The following are the principal appointments which have been made: Vice-Admirals—L. A. Caillard to be Inspector-General of Home Squadrons: R. J. Marquis to be Inspector-General of *Matériel;* P. Germinet to be Inspector-General of Schools and Seamen's Depôts; J. A. Philibert to be Inspector-General of Submarine Defences; H. A. Jauréguiberry to be Maritime Prefect (Commander-in-Chief) of the 5th Arrondissement Maritime (Toulon); M. I. Aubert to be Commander-in-Chief of the Second Squadron. Rear-Admirals—M. I. De la Croix de Castries to Command of the Naval Division in the Far East; J. C. Gaschard to Command of the 2nd Division of the First Squadron; J. L. Le Pord to be Member of the Technical Committee of the Navy; L. J. Berryer to Command of the 2nd Division of the Second Squadron; P. A. Le Bris to Command of the Gunnery School Division; A. Guillon to Command of the Torpedo Schools Division; M. J. Baudry-Lacantinerie to be Director of the Superior School of the Navy. Capitaines de Vaisseau—V. B. Senès to Command of the Moroccan Naval Division; F. Z. Jan-Kerguistel to Command of the Indo-China Naval Division; J. P. Rochas to "Henri IV."; J. V. Pradier to "Victor-Hugo"; P. J. Darrieus to "République"; B. M. Morier to "Charlemagne."—*Journal Officiel de la République Française.*

France.

Duties of the Inspector-Generals.—The decree creating the new Admiral Inspector-Generals appeared in the *Journal Officiel* of the 8th September, the four Inspectors being charged with the following duties:—

Inspection of Home Squadrons.
Inspection of Submarine Defences.
Inspection of *Materiél*.
Inspection of Schools and Seamen's Depôts.

The Vice-Admirals Inspector-Generals are *ex-officio* members of the Superior Council of the Navy, and the Inspector-General of *Matériel* is also President of the Technical Committee of the Navy. This is very similar to the system of Inspector-General established by M. Barbey when Minister of Marine in 1890, which, however, only lasted about two years, being discontinued on account of friction and conflict of authority with the Admirals commanding the squadrons. The new decree announces that a circular will shortly be issued defining the different duties; but it is considered a delicate matter, and for smooth working will require much tact and some abnegation from all concerned.

The Distribution of the Fleet.—The following is to be the new disposition of the fleet in commission:—

Home Fleet.

The names "Mediterranean Squadron" and "Northern Squadron" will be discontinued, and "First Squadron" and "Second Squadron" substituted.

Each home squadron will comprise: one squadron of 6 battleships, one division of 4 armoured cruisers, one flotilla of 12 destroyers, divided into two divisions, each under the command of a Capitaine de Frégate, and one first-class cruiser.

All the above will be fully manned. To each squadron is also to be attached a spare battleship and a spare armoured cruiser, half manned.

The ships on the Moroccan coast cease to belong to the home squadrons, and form an independent division, under command of a Capitaine de Vaisseau, senior officer.

The following is to be the composition of the home squadrons:—

First Squadron.

6 battleships: *Patrie, République, Démocratie, Justice, Liberté, Verité;* 4 armoured cruisers: *Jules Ferry, Jules Michelet, Ernest Renan, Léon Gambetta,* and, as repeating ship, the *Guichen;* 12 destroyers: *Obusier, Tromblon, Standard, Mortier, Fanion, Baliste, Sape, Pierrier. Stylet, Fleuret, Trident,* and *Branlebas;* spare battleship and cruiser: *Suffren* and *Victor Hugo.*

Second Squadron.

6 battleships: *Saint Louis, Gaulois, Charlemagne, Bouvet, Carnot, Jauréguiberry;* 4 armoured cruisers: *Marseillaise, Gloire, Amiral Aube, Condé,* and repeating ship the *Chateaurenault;* 12 destroyers: *Claymore, Sabretache, Carguois, Coutelas, Cognée, Fanfare, Oriflamme, Hacke, Gabion, X, Y, Z;* spare battleship and armoured cruiser, *Charles Martel* and *Dupetit-Thouars.*

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Divisions on Foreign Stations.

The divisions of the Far East and Pacific are to form one division composed of 3 armoured cruisers, but there will be no change in the disposition of smaller vessels detailed for special purposes.

Schools of Instruction.

The gunnery school ships are constituted a divisional command under a Rear-Admiral, in direct correspondence with the Minister of Marine. The union in one command of the torpedo schools is under consideration.

Ships in Reserve.

The coast-defence battleship *Henri IV.* will replace the *Acheron* at Biserta; of the 8 other coast-defence battleships, 4 will be put out of commission, 1 will be used as a tender to the gunnery school to replace the *Descartes*, and 3 will be appropriated as depôt ships for flotillas of torpedo boats and submarines.

Flotillas of Torpedo Boats and Submarines.

The only change will be the placing of the flotillas of Dunkerque, Cherbourg and Toulon, under the superior command of a Capitaine de Vaisseau.

Artillery Naval Engineers.—A *projet de loi* has for some time been before Parliament for creating a Corps of Artillery Engineers for the Navy, under the direct orders of the Ministry of Marine; but though passed through the Senate, it has not yet come before the Chamber, and there seems no prospect of its becoming law during the present session. Hitherto the naval ordnance department has been staffed exclusively by officers of the *Artillerie Coloniale*, and in consequence of the above delay it is proposed that the old system be continued, at any rate for another year. The Minister of War, in consultation with the Minister of Marine, has agreed to this course, and has directed that the officers and men of the *Artillerie Coloniale* so employed be dispensed from their turn of foreign service for another year.

The Budget for 1910. — The Budget de la Marine for 1910, as rectified by the new Minister of Marine, has been under the examination of the Commission du Budget. The total credits asked for amount to 371,475,862 francs (£14,859,034), being an increase of 29,980,204 francs (£1,199,208) over the estimates as prepared by M. Picard. The vote for provisions has been somewhat increased, so as to provide an increased ration for the seamen, and there is an increase to the *personnel* of the naval hospitals. As regards *matériél*, 1,150,060 francs (£46,000) is asked for increasing the reserve of stores for the fleet. Six (750-ton 31-knot) destroyers are to be built similar to those laid down in 1909, half in the arsenals and half by contract, and two destroyers of 450 tons are to be built at Rochefort and two 200-ton torpedo boats by private firms. No large ships are contemplated at present. There is also money provided for increasing and renewing machinery and

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tools in the arsenal. The increase in the vote for artillery is, however, the most important, 39,822,500 francs (£1,569,020) being asked for instead of 21,822,500 francs (£872,880) as before, the increase being for hastening construction and for larger supplies of ammunition.—*Le Temps* and *Le Vie Maritime*.

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Bids for New Battleships.—The bids for the two new battleships, Nos. 32 and 33, or, as they are to be known, the *Arkansas* and the *Wyoming*, were opened on 18th August, with the result that the Cramps and the New York Shipbuilding Company are supposed to have made the successful bids. The Cramps put in two bids that were lower than any others, but as but one ship can go to any one firm, the next low bid, that of the New York Shipbuilding Company, is likely to be the one that will be accepted. These bids are under Class 1, where all bid on the same specifications, which call for Babcock and Wilcox boilers and Parsons turbines. The other bids, in which provision was made for the adoption of Curtis turbines and with the Department's selection of power, are practically out of the final consideration, as the lowest bids appeared in those made under Class 1.

The plans on which these two ships are to be built call for 545 feet length, 93 feet beam, 28 feet 6 inches draft, 26,000 tons displacement, 33,000-H.P., 20½ knots speed, with 3,000 tons coal supply and an armament of twelve 12-inch guns, twenty-one 5-inch, and two torpedo-tubes. The armour is 11-inch on belt and barbettes and on sides 8-inch, and the ships are to carry a complement of 1,100 officers and men. All the 12-inch guns are to be carried in turrets set on the median line of the ship. Two of the turrets will be set forward on the forecastle deck, which will have twenty-eight feet freeboard, and the guns in the first turret will be thirty-four feet above the water, and those of the second turret about forty feet. Aft of the second turret will be the conning-tower, and then will come the fore fire-control tower or woven wire mast, with searchlight towers carried on it. Next will come the forward funnel, on each side of which will be two small open rod towers with strong searchlights. Then comes the main fire-control tower and the after funnel and another open tower with searchlight. The two woven wire towers are 120 feet high and about forty feet apart. The four remaining turrets are aft of the main funnel, the third turret having its guns thirty-two feet above water; those in the other turrets are about twenty-five above the water.

The guns will be the new 50-calibre type. All twelve can be swung in broadside fire over a wide arc, and four can be fired dead ahead and four also dead astern. It was by the decision of the Department that Parsons turbines were designated for use. The fact is recognised that it is impossible to determine within any reasonable time whether the Curtis turbine has a superiority over the Parsons type. There is some expectation that the trials of the *Salem* may develop some surprises as to the efficiency of the Curtis turbine, but this will not be decided for many months to come, and meantime the new ships must be laid down and built. And even then the possible superiority of the Curtis turbine is speculative at this time. It was, therefore, thought wiser, in view of all consideration, to decide on the Parsons turbine.—*Army and Navy Journal*.

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Prizes for Engineers of the Navy.—The Secretary of the Navy has issued a general order establishing the conditions for prize money competition in engineering. The competition will be under the direction of the Bureau of Navigation, through the office of target practice inspection. The order, in part, follows :—

"The Department has determined to establish yearly competitive steaming contests between battleships, armoured cruisers, torpedo-boat destroyers and torpedo-boats. The rules for competitive steaming are laid down to insure fair competition, and must be rigidly adhered to as the first requisite of any successful competition.

"In order that progress may be made in this branch of training afloat it is directed that at the end of each yearly competition each commanding officer and senior engineer officer will submit a report setting forth any methods adopted to increase economy that they may deem worthy of note, and also any suggestions looking to the improvement of the rules as laid down. It is strictly forbidden to endeavour to save coal by restricting the use of power necessary for the proper training of the *personnel*, the general health of the crew and efficiency of the ship.

"The standards for the different classes of vessels have been established from experience gained in the past and from data obtained from past performances of the battleships and armoured cruisers; and while certain ships may be favoured in some instances every effort will be exerted by the Department to adopt such measures in improving the machinery as are demonstrated to be necessary in order to even conditions.

"The winning vessels will receive suitable trophies, which will be carried for the following year in some conspicuous place, and the name of the vessel, with the year she won it, will be inscribed on each trophy. The commanding officer and engineer officers of the winning vessels will receive commendatory letters from the Department, copies of which will be filed with their records. Money prizes will be given to the men of the engineer's force of the winning vessels, as set forth below, but no man not actively engaged on his station in the engineer department during one of the full power trials will be entitled to prize money. Shares are assigned to men of different rating, as follows :—

"Chief petty officers, 15 dollars; petty officers, 1st class, 10 dollars; petty officers, 2nd or 3rd class, 8 dollars; firemen, 1st class, 7 dollars; firemen, 2nd class, 6 dollars, and coal passers, 5 dollars. These prizes are to be paid in the same manner as gunnery prizes and are to be exempted from checkage by sentence of a summary court-martial. The rules and instructions governing the competitions will be issued by the Department from time to time, and will be considered confidential."—*United States Naval Institute Proceedings.*

World's Largest Dry Dock.—Contracts for what is destined to be the largest dry dock in the world were awarded by the Navy Department on 15th June, when Secretary Meyer accepted the bid of the San Francisco Bridge Company, for the construction of the dry dock at Pearl Harbour, Hawaii. The masonry and cement part of the big structure is to cost 1,760,000 dollars, and the finishing work necessary to complete it will run the cost even higher.

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When it is ready for the reception of vessels, the dock will accommodate the largest of the battleships and have room to spare. It will be able to take in a complete flotilla of torpedo-craft, or two cruisers at the same time. The dock is 620 feet long and 140 feet wide outside the coping, and it will be equipped with the most modern appliances for repairing the vessels of the navy.

Plans for an elaborate system of defences for the harbour have been drawn, and work is to proceed at once, keeping pace with the construction of the dock.—*Nautical Gazette.*

School of Marine Engineering.—G. O. 27, 9th June, 1909, Navy Department.

1. The Department hereby establishes a school of marine engineering at the Naval Academy, Annapolis, Md.

2. The Superintendent of the Naval Academy will be the military head of the school while it is in session at Annapolis.

3. He will establish regulations, subject to the approval of the Department, that will secure ample use of the educational plant of the Naval Academy to students and instructors of the school without interfering with the instruction of midshipmen.

4. The Chief of the Bureau of Steam Engineering will issue such orders as will secure the use of the engineering experiment station at Annapolis by the school.

5. The course of instruction in the school will not exceed two years.

6. The Bureau of Steam Engineering will prepare and submit to the Bureau of Navigation, for the approval of the Department, a curriculum for the school. This will include, in part, the study of design of marine machinery at the Bureau of Steam Engineering; the study of shop practices and management at such private engineering establishments as may be willing to allow the facilities of their plant for this purpose, and of experimental engineering and testing machinery and other mechanical appliances.

7. Instructors while at the school will be directly subject to the authority of the Superintendent of the Naval Academy, but they will not be connected with its academic work.

8. Ten line officers will be detailed annually to the course of instruction at the school.

9. Selection for this detail will be made by the Department from officers who are recommended for this duty and who request it. They must have performed not less than three years' service at sea, and except those selected for the first class must be below the grade of lieutenant commander. They will be selected on their records and reports of fitness, including letters from their commanding officers and from the engineer officers under whom they have served.

10. After completion of the course at the school of engineering, the student officers will, if practicable, be ordered to engineering duty on shore for a short time and then to engineering duty with the fleet.

11. Applications for permanent duty as designing engineers will be considered by the Department from graduates of the school and from other officers especially well qualified, but applications from graduates will not be considered until after two years from the date of their graduation. The

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selection of such applicants for duty as designing engineers will depend upon their records and recommendations.

12. Normally, officers will be selected for permanent engineering duty at the rate of about two per annum, but this number may be subject to variation from year to year according to the desirability of the candidates.

13. No one will be selected except at his own request. Not more than twenty officers in the navy shall be at one time borne on the list for this special duty, and those selected after 1912 shall have taken a course of instruction at the school of marine engineering.

14. Officers selected as designing engineers will be given facilities for perfecting themselves as such, and will be detailed at all times for engineering duties.

15. Special examinations for promotion will be given those officers who specialise as designing engineers, as their fitness for promotion will depend upon their engineering knowledge. These officers will be promoted in regular order, retaining their present precedence.

16. Of the graduates of the school of marine engineering those selected for permanent duty as designing engineers will not be detailed to command at sea. All other graduates of this school will be available for detail to any duty.

17. Applications from officers eligible under this order for detail as students in the school of marine engineering are invited. Commanding officers will accompany each application with a specific recommendation as to the desirability of the applicant for this special duty and will immediately forward all applications direct to the Department through the Bureau of Navigation. When such applications cannot be received by mail at the Department before 15th August, 1909, commanding officers are directed to transmit by cable the names of the applicants for this duty whose applications have received their favourable endorsement. It is desired that all applications for this duty be received before 15th August, 1909, in order that the school shall begin its first term in October, 1909.

18. Officers below the grade of commander having had engineering experience desiring permanent assignment under paragraph 11 as designing engineers will immediately forward their applications to the Navy Department.

19. Officers who, under previous instructions of the Department, have signified their desire to take a course of instruction in marine engine design with a view to specialising in that branch, will renew their application should they desire to avail themselves of the opportunity offered by this order, as the system hereby established replaces that previously contemplated.—G. v. L. Meyer, Secretary of the Navy.

MILITARY NOTES.

Home. The following are the principal appointments which have been made :—

Major-General C. T. E. Metcalfe, C.B., to Command 6th Division, Cork (Irish Command).

Colonels—L. E. Kiggell, C.B., to be Director of Staff Duties at Headquarters, with temporary rank as Brigadier-General; E. J. Phipps-Hornby, V.C., to Command Royal Artillery, 4th Division (Eastern Command) with temporary rank as Brigadier-General; T. D'O. Snow, C.B., to Command 11th Brigade, Colchester (Eastern Command) with temporary rank as Brigadier-General; C. R. R. McGrigor, C.B., to be Brigadier-General in Charge of Administration (Western Command); W. E. Fairholme, C.M.G., M.V.O., to be Military Attaché (Paris-Madrid-Lisbon); W. C. Savile, D.S.O., to be an Assistant Director at Headquarters; A. D. B. Buckley to be as Assistant Adjutant-General at Headquarters; F. C. A. Gilpin to be Assistant Quartermaster-General (Southern Command.)

Indian Army.—Colonel G. A. Cookson to Command Cavalry Brigade, Bangalore (Southern Army).

Presentation of Colours to Territorials by the King.—On Monday, 25th ult., on Mousehold Heath, Norwich, His Majesty presented a Guidon to the Royal Regiment of Norfolk Yeomanry, of which he is Colonel-in-Chief, and Colours to the 4th and 5th Battalions of the Norfolk Regiment.

On the Cavalry drill-ground on Mousehold Heath were mustered 3,300 of all arms, the Norfolk units of the Norfolk and Suffolk Brigade of the Territorial Force, with Brigadier-General J. H. Campbell, commanding the East Anglian Division of the Territorial Force, in command. In the first line were the Norfolk Yeomanry, 400 strong; the 1st East Anglian Brigade Royal Field Artillery, 422 strong, with 12 guns; 4th Battalion Norfolk Regiment, 840 strong; 5th Battalion Norfolk Regiment, 838 strong; and 6th Battalion Norfolk Regiment (Cyclists), 500 strong. The second line was composed of the Norfolk and Suffolk Brigade Company Army Service Corps, 88 strong; and the 2nd East Anglian Field Ambulance, 249 strong. In the third line were 30 civilian motor-cars registered for use on mobilisation. The troops made a splendid show in the bright sunshine, and the manner in which they acquitted themselves on parade, especially the Artillery, evoked unstinted praise from those qualified to pronounce an opinion. The Royal pavilion was erected near the saluting base. On His Majesty's arrival he was received with a Royal Salute, and drove down the line to inspect the troops. He then returned to the pavilion for the ceremony of consecrating the Guidon which was to be presented to the Yeomanry and the Colours for the 4th and 5th Infantry Battalions. The Guidon and Colours were placed on piled drums in front of the pavilion, and facing them stood His Majesty, with the Earl of Leicester, the Earl of Albemarle, Mr. Haldane, and His Majesty's Equerries The Colours were then consecrated by Bishop Taylor Smith, Chaplain-General to the Forces, the Benediction being pronounced by the Bishop of Thetford. His Majesty then presented the Guidon and Colours

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to the colour parties, who returned to their units, halting twenty yards in front while the troops saluted the Colours. Next came the march-past. First came the Yeomanry in column of troop, their band playing the "Coburger March," then the Artillery in quarter column of batteries, the ammunition column bringing up the rear. The Earl of Stradbroke, their honorary colonel, rode at the head of the Artillery. The 4th and 5th Battalions of the Norfolk Regiment went by in quarter column, the Earl of Leicester riding at the head of the 4th Battalion, of which he is honorary colonel. The 6th Battalion, composed of khaki-clad cyclists, followed, and afterwards the Army Service Corps Company (without wagons) and the Field Ambulance. Succeeding these came an un-uniformed but quite as interesting a muster—400 members of the Royal Norfolk Veterans' Association, marching four deep, nearly every man of them wearing an active service medal. They were headed by their band, and marched to the appropriate tune of "The Old Brigade." The Norfolk ex-Volunteers in possession of the Long Service Medal followed. After the march past, the whole of the troops on parade advanced in review order, the massed bands playing "Rule, Britannia," and finally the National Anthem, as His Majesty left the review ground. Before the King left the pavilion, the members of the Norfolk Territorial Force Association were presented to him, including the Right Hon. A. E. Fellowes, the chairman.

Promotion in the Army.—Amongst the Parliamentary papers issued recently was the following return (275), showing the average time taken from the date of first commission in attaining respectively the ranks of captains and of majors of officers in the Cavalry, Royal Artillery, Royal Engineers, Infantry, and Indian Army :—

—	Captain.		Major.	
	Years.	Months.	Years.	Months.
1905 Cavalry	6	7	14	—
Artillery, Field	7	6	16	—
„ Garrison ...	7	—	19	—
Engineers	9	—	18	6
Infantry	6	9	18	1
Indian Army	9	—	18	—
1908—Cavalry	7	5	14	10
Artillery, Field.	8	6	17	6
„ Garrison ...	8	—	20	—
Engineers	9	—	19	7
Infantry	8	4	18	3
Indian Army	9	—	18	—

Disbandment of Units.—The Army Orders for October announce that the King has approved of the disbandment of the following units of Royal Field Reserve Artillery, on a date to be given hereafter: The South-East of Scotland, the Cornwall and Devon Miners, the Devon, the Donegal (the Prince of Wales's), the Dublin City, the Durham, the Duke of Edinburgh's Own Edinburgh, the Fife, the Forfar and Kincardine, the Glamorgan, the Duke of Connaught's Own Hampshire and Isle of Wight, the Kent, the 1st Lancashire, the 2nd Lancashire, the Limerick City, the Mid-Ulster,

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the Prince of Wales's Own Norfolk, the Northumberland, the Carmarthen, the Suffolk, the Sussex, the Tipperary, the Waterford, the West of Scotland, the Pembroke, the Yorkshire (Duke of York's Own), the Cardigan, the Wicklow, the Duke of Connaught's Own Sligo, the Londonderry, and the Clare.

Flies as Carriers of Infection.—In the Reports to the Local Government Board on Public Health and Medical Subjects (New Series, No. 16), the following conclusions drawn from investigations with regard to flies as carriers of infection are given, and as the subject is an important one from an Army point of view, we reproduce the paragraphs in question (page 30) :—

"Although a perusal of the preceding pages will show that there were some who at a very early date looked upon the common house-fly with suspicion, it is only of recent years that 'flies' have come to be regarded as a serious factor in the spread of infective diseases.

"The evidence we have sifted and ordered in these pages is obviously very unequal in value, the most important relating to *cholera and typhoid fever* — in both cases the evidence incriminating house-flies, of which *Musca domestica* may be regarded as the type, appears to be quite conclusive, and these agents will have to henceforth receive the serious attention they demand at the hands of sanitary authorities. From a practical point of view it scarcely appears necessary to charge the house-fly with more misdoings, bacteriological tests having shown that they are capable of taking up a number of different pathogenic germs and of transporting them from one place to another. We regard it as certain that they convey cholera and typhoid fever, and we look forward with confidence to the complete demonstration that they convey the causative agents of infantile diarrhœa and of dysentery, always remembering that there are other vehicles, water, milk, etc., by which these diseases may be communicated.

"It should be remembered that a fly may cause *relatively gross infection* of any food upon which it alights after having fed upon infective substances, be they typhoid, cholera, or diarrhœa stools. Not only is its exterior contaminated, but its intestine is charged with infective material in concentrated form which may be discharged undigested upon fresh food which it seeks. Consequently, the excrement voided by a single fly may contain a greater quantity of the infective agents than, for instance, a sample of infected water. In potential possibilities the droppings of one fly may, in certain circumstances, weigh in the balance as against buckets of water or of milk!"

Austria-Hungary.

What a War would Cost in the event of its being Necessary to Mobilise the whole Austro-Hungarian Army.—In the last number we gave a *résumé* of an article which had appeared in *Danzer's Armee Zeitung*, giving the probable cost of a war limited to Austria-Hungary on the one side and Servia and Montenegro on the other. The same author, in a second article, gives an outline of the expenses that would have to be incurred in the case of a general mobilisation. The following are the results at which he arrives :—

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A general mobilisation would become necessary if, instead of having only Servia and Montenegro to deal with, Austria had at the same time to face war with Russia, and eventually with Italy.

Such a situation would require not only the mobilisation of the Common Army and the two *Landwehrs*, but also that of the greater part of the *Ersatz-Reserve* and of the *Landsturm*.

We should have, consequently, to provide for :—

1. The field army, that is to say the placing on a footing for taking the field of the army and the two *Landwehrs* (12 classes)—in round numbers, a million men.
2. The march formations of the field army, formed principally of reservists, and comprising new units for the *Etappen* service—that is, 150,000 to 200,000 men.
3. The units necessary for completing to a war footing of the army and the two *Landwehrs*, comprising the men of the *Ersatz-Reserve* and the non-trained recruits—400,000 to 500,000 men.

Those three contingents of the field army, for which everything is prepared in time of peace, number at least 1,600,000 men.

In addition, every preparation is made in peace time for the mobilisation of the new units of the *Landsturm*, the effective strength of which is kept secret. We may assume that during the course of the campaign new units would be organised with the disposable men of the *Landsturm* and *Ersatz-Reserve*. The whole of these last units may be calculated at a strength of half the army of the first line—that is, 800,000 men. The total number of men under arms at the moment when the strain would be greatest would then be 2,400,000 men, now that the number of disposable men is 3,700,000.

We will calculate the war expenses for an effective strength of 2,000,000, allowing for the maintenance by the ordinary Budget, as in time of peace, of 400,000 men. If we assume, as we have done before, the sum of 12·5 crowns (10s. 5d.) as the mean cost per man per day (including the allowances to the families of the men recalled to the colours), the expense per day for the effective strength of 2,000,000 men is 25 million crowns (£1,041,666).

One cannot base one's estimates as to the probable duration of the war from the Russo-Japanese war. In a European war the general mobilisation will allow of an immediate full deployment of the forces, which the Japanese only attained after the war had lasted a year. In supposing that it lasts six months, we shall probably approximate the mark; the excess of expenses resulting from the war for that length of time would be four and a half million crowns. These expenses would not be divided equally over the whole period; at the outset there are stores of all kinds to be provided or stocks to be made good, and it will be necessary to provide 1,200 million crowns (£50,000,000) for the first six weeks of the mobilisation. It will further be necessary to provide considerable sums in order to make good the depletions from the depôts, to allow for the payment of the non-commissioned officers and men, and to avoid an industrial crisis. One can estimate the amount of money so required at 650 million crowns (£27,083,333); that is, for the first six weeks—a total sum of 1,850 million crowns (£77,083,333).

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In order to meet these expenses, it will be necessary at first to rely on the Austro-Hungarian Bank. Supposing that at the moment of mobilisation the Bank had a gold reserve of 1,550 million crowns (£64,583,333), it could issue notes to the amount of 3,880 million crowns (£161,166,666)—two and a half times the amount of the gold reserve. As the actual amount of the note issue at present does not much exceed 1,800 millions (£75,000,000), there could be an issue, in case of mobilisation, of 2 milliards (£83,333,333) of notes, which would be sufficient to cover the expenses of the first six weeks.

In order to meet the subsequent expenses, there will be two measures possible: either impose war taxes or contract war loans. In the first case, if the war only lasts a short time, the amount obtained from the new taxation would be but small. In order not to unsettle the country, it would be better either not to impose them at all, or to be content with only a small increase of the existing taxation. The loans should be contracted in the form of short-term loans, after the method adopted by the Russians during the late war.

If the war was localised between Austria and Italy, or Germany, Austria and Russia, these loans could be placed in a great part abroad, and that without much difficulty.

But it is difficult to foresee what would happen if France and England became involved. One critical side of the launching of these loans is that they would have to be guaranteed by all parts of the Monarchy, and the credit of the different members is not the same, as we have seen when the last issue of Treasury Bonds took place. Whilst the 150 million crowns (£6,250,000) of the Hungarian four and a half per cent. loan was only subscribed four times over, the Austrian loan, bearing only 4 per cent. interest, was covered twelve times over. It is therefore perfectly evident how the preparation for war of the Monarchy might be endangered if the proposed separation of the Bank between the two countries was carried out.

Finally, it is interesting to examine how far the Monarchy, in case of a successful war, could recoup itself for its expenses. This recoupment could be obtained either by an annexation of territory or by a war indemnity.

As far as the Balkan States are concerned, it would only be a question of the annexation of the two countries.

In a war with Italy, the annexing of a province can hardly be considered as practical; we could only look forward to some rectification of the frontiers and the occupation of certain important points on the east coast, such as Venice or Ancona, in order to put an end to Italy's aspirations on the Adriatic coast. On the other hand, owing to its great resources and the sound state of its finances, Italy could easily pay a war indemnity.

The case would not be the same as regards Russia. There would be the temptation to annex territory, Russian Poland, the Podolia, and Volhynia, which only belong against their will to Russia, and whose inhabitants do not understand the Russians. Still the annexing of these countries to the Austro-Hungarian Monarchy does not appear desirable.

Further, we could not count upon a war indemnity. A war would mean for Russia ruin; an unsuccessful war, complete Anarchy. It would be necessary to find some way by which an insolvent debtor could pay his debts.

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Russia possesses in her immense territory considerable sources of natural wealth; but Russia cannot, without foreign aid, develop these resources, and it would therefore be necessary for us to insist on the appointment of trustees, whose duty it would be to find the necessary funds, and superintend the work of developing these natural riches.—*Revue Militaire Générale.*

France.

The New Generalissimo of the French Armies. — By a Presidential Decree of the 31st of August, General Trémeau, who was already a Member of the Superior Council of War, has been named Vice-President of the Council in succession to General Lacroix, who retires on reaching the age limit. This appointment, although wearing the appearance of being an honorary one, and which in time of peace carries with it scarcely any special privileges beyond that of Director of the Army Manœuvres, entails, however, on mobilisation the Command-in-Chief of the whole forces grouped on the North-east Frontier, making the holder of it, to all intents and purposes, Generalissimo of the French Armies. And it is, as a matter of fact, under this designation that he is known to the public, which cares little for official distinctions and subtleties.

The choice of the Government has met with universal approval; but nowhere has it been received with so much pleasure as by the cavalry, which now sees with pride for the first time since the reorganisation of the Army the most distinguished of its old chiefs appointed to the supreme command in the Army.

It is with the cavalry that the new Generalissimo, except for intermittent periods of Staff service, has passed his career. Born on the 6th September, 1849, his age will allow of his holding his new appointment for five full years. He joined St. Cyr in October, 1869, receiving his commission as Sub-Lieutenant in the 5th Dragoons on the 14th August, 1870, with which regiment he served during the war, taking part in the defence of Paris. He was promoted to Captain in October, 1875, and the following year joined the Superior Military School (now the Superior School of War), and in 1879 was appointed to the General Staff. During the next few years he served as Aide-de-camp to General Campenon during the three periods when that officer was Minister of War. In 1888 he was promoted to Chef d'escadron (Major), and in December, 1890, to Lieut.-Colonel, having in the interval served as Professor of Military Art and Sub-Director of Studies at the Saumur Cavalry School, and then as Chief of the Staff of the 2nd Cavalry Division. In 1893, having served as Sub-Chief of the Military Cabinet of General Loizillon, then Minister of War, he was promoted to Colonel and the command of the 4th Chasseurs, which appointment he held until he was made General of Brigade in July, 1899.

After having commanded in succession the Cavalry Brigade of the 1st Army Corps and the 6th Infantry Brigade, he was promoted to General of Division in July, 1902, and appointed to command the 3rd Cavalry Division, and in October, 1904, to the command of the XIIth Army Corps, and then of the VIth, at the same time being appointed President of the Cavalry Technical Committee. In July, 1907, he was appointed a Member of the Superior Council of War, in 1908 commanding with great distinction one of the armies at the Grand Manœuvres of the

France.

centre, while this year, after his nomination as Vice-President of the Council of War he exercised the supreme direction of the Grand Manœuvres.

He is without question the *right man in the right place*, and enjoys the complete confidence of both Government and the whole Army.—*Revue de Cavalerie.*

Programme for the Reorganisation of the Artillery.—A Ministerial Instruction of the 26th August last regulates as follows the reorganisation of this arm of the Service, of which details have already been given :—

On the 1st October, 1909 :

94 field batteries, armed with the 7·5-cm. Q.F. gun (14·5-pounder), are to be created, and 36 horse artillery batteries are to be transformed into field.

On the 1st March, 1910:

Ten field artillery regimental staffs, 2 mountain artillery regimental staffs, and 11 foot artillery regimental staffs are to be created; 7 staffs for artillery groups, 5 field and 2 foot, and for 4 field batteries in Africa.

On the 1st July, 1910:

The replacing of the 10 Artisan Companies and 3 of Mechanics, at present existing by 4 Artisan Companies attached to the fortresses of Belfort, Epinal, Toul and Verdun, and 86 sections of the types A, B, C, and D.

On the 1st October, 1910 :

Creation of 65 field batteries, armed with the 7·5-cm. gun, and of 3 batteries of 6-inch howitzers.

On the 1st March, 1911 :

Creation of 12 field artillery regimental staffs and completion of reorganisation.

The existing 18 6-inch field howitzer batteries will be stationed in groups of 3 at Donai (15th Regiment), Orléans (32nd), Le Mans (31st), Poitiers (20th), Vincennes (13th), Valence (6th).—*Bulletin de la Presse et de la Bibliographie Militaires.*

Germany.

Creation of a New Cavalry Brigade.—In accordance with the last Quinquennial Law and the Finance Law of 1909, the organisation of a sixth cavalry brigade was commenced on the 1st of October, in the Bavarian Army, which will be attached to the 6th Infantry Division (IIIrd Bavarian Army Corps), the only one up to the present not provided with cavalry.

This new formation will necessitate the creation of a brigade staff and of a new regiment of *Chevau-légers*, which will take the No. 8. This regiment, composed of four squadrons, will be stationed at Dillingen, on the Danube; but this regiment will not form part of the new brigade: it will replace in the 2nd Cavalry Brigade (Augsburg) the 2nd *Chevau-légers*, who will pass to the 6th, and will consequently be transferred from Dillingen to Ratisbon, where also the headquarters of this last brigade will be established, adjacent to that of the infantry division and of the Army

Germany.

Corps to which it is attached. The second regiment of the new brigade will be the 7th *Chevau-légers*, which will remain stationed at Straubing. The 8th regiment of *Chevau-légers* will be constituted by means of the 2nd squadron of the 2nd regiment, of the 5th squadron of the 4th, of the 2nd squadron of the 5th, and of a newly created squadron. After the creation of these new units, the six infantry divisions of the Bavarian Army will each have their cavalry brigade of two regiments, each with four to five squadrons.

The Horsing of Bridging Matériel.—According to the *Kavalleristische Monatshefte*, in future the vehicles conveying the bridging *matériel* of the German cavalry will be drawn by 6 horses instead of only by 4; the intention being to notably increase the mobility of a *matériel*, specially called upon to follow the mounted regiments.

Each regiment of cavalry disposes of two of these wagons, each carrying a half-pontoon-boat of steel and the necessary fittings; these two half-boats can be rapidly put together to form the complete pontoon-boat. With this *matériel* the regiment can construct a foot-bridge 32 metres (105 feet) long or a light bridge 8 metres (26 feet) long, and 9 feet 9 inches wide, or one 12 metres (39 feet) long and 6 feet 6 inches wide; the foot bridge can only be used by men on foot, the light bridges being for the horses.

A cavalry division of 6 regiments can construct a foot-bridge 190 metres (625 feet) long, or a light bridge of 50 metres (164 feet). A regimental equipment also allows of the construction of a raft or flying bridge of 16 square metres (172 square feet) of surface, which can carry either a wagon (gun, machine-gun carriage or caisson) or 4 horses with their drivers, or 30 men, or 50 saddles loaded with the arms of the riders.

When the *matériel* is used for the construction of a foot-bridge, the horses cross over by swimming alongside it, held by means of the bridoon, which is attached to the lance sling.—*Revue de Cavalerie.*

Promotion of Officers.—An examination of the recently published seniority list seems to show that, if in the course of the year 1908 the conditions of promotion have slightly improved in a small number of grades, on the whole promotion, particularly in the lower ranks, has become slower.

No Lieut.-Generals were promoted to the rank of General of Infantry, Cavalry, or Artillery; the senior among them, General Emmich, who last year headed the list, was promoted in 1905, having received his commission as officer in 1868; he has, however, been promoted to General of Infantry this year, and at present commands the Xth Army Corps. For the rank of Major-General the conditions of promotion have undergone no modification, the senior Major-General having held that rank for three years.

Among the Colonels the senior have four years' standing, but their position is not the same in all branches of the service, for while in the infantry one only holds an *interim* command as Brigadier, twenty-one cavalry and as many artillery Colonels command brigades.

Lieut.-Colonels are worse off by a month, the senior among them having three years' standing; but here again while no Lieut.-Colonel of Infantry commands a regiment, all the Lieut.-Colonels of Cavalry, except

Germany.

two, 44 Lieut.-Colonels of Field Artillery, and all those of the Foot Artillery command regiments. This difference in the employment held by officers of the same rank, though belonging to different branches of the service, is due to the fact that starting from the rank of Major, officers selected for promotion are drawn from the whole army, while employment is dependent upon regimental vacancies.

The promotion of Majors has been normal, the maximum time passed in that rank being six years and a-half.

Starting from the rank of Captain, the conditions of promotion in the different branches show some disproportion, which is somewhat modified by delaying the patents of officers who belong to the more favoured arms. As regards promotion to the rank of Captain, it is slower by four months in the infantry and field artillery, seven months in the foot artillery, nine months in the train, and twelve months in the communication troops, but is more rapid by a month in the Pioneers and three months in the cavalry. The time passed in this rank varies between eleven years and a-half in the infantry, and rather more than ten in the foot artillery. It must be noted, however, that by a system of antedating the patents of officers, who it is wished to push on, this time is often lowered to six years and a-half.

For the ranks of First and Second-Lieutenants, the position has become frankly worse, except in the cavalry. The time passed in these two grades is now almost sixteen and a-half years for the infantry. This unsatisfactory state of things is causing serious concern, and among other remedies it is suggested that the number of Lieutenants should be decreased and that their place should be taken by Warrant Officers (*Feldwebel-leutnants*) selected from among the non-commissioned officers.—*Revue Militaire des Armées Etrangères.*

Russia. *Lessons from the Past* (Extract from the *Novoe Vremya*).—Translated from the Russian by A.P.B.

Until the Russo-Japanese War, neither our own nor any other European Army has ever experienced a battle which has lasted uninterruptedly for the whole of two or three weeks, for, up till now, no engagement has exceeded a few hours, or at most, a few days.

These protracted battles, the exclusive speciality of the past war, appear to be the inevitable consequence of Japanese tactics, and if one may judge from the character of their present preparations, the Japanese intend in the future to act in precisely the same manner, carrying the fundamental principles of their tactics up to the extreme limit of their development. Thus they are acting on the basis of the experience gained in the war with us. This experience gave them two chief and exceedingly important lessons.

The first may be summed up as follows :—

Although the modern rifle, with its long range affords the possibility of shooting up to four or five thousand paces, it is nevertheless this very property of the arm which renders it not only useless but even dangerous (that is, when used in the defensive in the initial stages of a battle).

Shooting at such long ranges the infantry can, no doubt, inflict by their fire considerable damage; but, at the same time, they expose them-

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selves to the activity of the enemy's artillery and thereby suffer a greater loss themselves. Consequently a battle, until some decisive moment, must be carried on exclusively by artillery fire, and the infantry must meanwhile hide themselves as best they can in the trenches, so as to lose as few men as possible. This decisive moment occurs only when the enemy, who have assumed the offensive, advance their attacking units up to 1,000 paces from the infantry trenches.

The second lesson of experience points out that if the defending infantry up to this moment preserve their full strength and vigour, and a plentiful supply of ammunition, and open fire in small groups (*i.e.*, controlled), they will not permit the enemy to advance even so much as 200 paces, and every effort against the defence will seem futile.

The Japanese regard this maxim as absolutely reliable, and it was so in the case of our troops, who advanced without flinching so long as they had a leg to stand on, till there remained a mere handful, 10-15 men per company. It is generally supposed that the loss of one-third of the *personnel* is quite sufficient to stagger the attack—this is the usual limit of endurance of European troops.

Our attacks on the Japanese positions succeeded only on those occasions when the Japanese infantry opened fire too soon and, consequently, when the decisive moment arrived they had already suffered considerable loss, and there was also a shortage of ammunition.

The Japanese decided that such mistakes should never recur. And profiting by the experience of the war, they have, during the last two years, been training their troops on the following lines :—

As soon as the troops occupy the positions allotted to them, the infantry immediately begin to dig trenches and, in the literal sense of the word, burrow into the earth. Above ground remain only the guns and machine guns, and the whole—both the infantry trenches and the gun epaulements—are covered from the view of the enemy by a skilful adaptation to the surroundings and a masterly method of concealment, of which only the Japanese—special adepts in the art—are capable.

They also construct beforehand plotting boards of the immediate vicinity, showing the positions of the enemy, the distances to them and to all well-defined objects. The field range-finders, with which all Japanese units are supplied, are of great assistance in this.

Their scouts make their way to the rear of the enemy's positions, and give the signal (even flashing small mirrors in the sun), while the range-finders take the ranges of these bright objects from the batteries.

In this manner, knowing the exact direction and the range of the most important points of the enemy's dispositions, the Japanese can fire on them with the same precision by night as by day.

This method of firing at extreme ranges is taken from "Siege Artillery Guns Adapted for Field Work."

The new park of such artillery consists of 500 guns. No system of cover trenches possible in the field can withstand the high explosive charge of these guns. For high elevation and concentration of fire this park is provided with mortars and howitzers.

In addition to the siege pieces they have 105 millimetre guns—also recently introduced by them—with a range of 10 versts (11,660 yards), firing shrapnel and shumôse shells weighing 40 funt (36 lbs.).

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At 3.4 versts (3,498-4,664 yards) nearer, the large number (at the present time 1,788 guns) of Japanese field artillery guns begin to thunder on the enemy.

If in the past war the fire of their artillery produced a terrible impression by the strength and intensity of their fire, it is now almost impossible to form a correct estimation of its effect. Take, for instance, any hostile unit advancing to attack the Japanese trenches. What awful carnage will result in the area swept by the fire of these three types of guns.

Now the explosion of every 40 funt (36 lbs.) to say nothing of the heavier siege shells, is equal to the explosion of a fougasse.

To this diabolical thundering must be added the crackling of numerous machine guns with a range of 3,000 paces (besides the machine gun batteries the Japanese provide a regimental machine gun one per battalion), and when at last torn to pieces, shaken and disordered, the attacker rushes on to 1,000 paces, the line of trenches hitherto unnoticed bristles with glistening bayonets, and the infantry behind them meet him with a rifle fire of almost unerring accuracy. If the attacking enemy does not change his tactics, he will be annihilated before he reaches 800 paces.

The Japanese are quite confident of this result, and in order to obtain under these conditions the most accurate rifle fire possible, they are not deterred by the expense of remodelling all their rifles (Azuzaka pattern) with the object of obtaining a flatter trajectory.

In accordance with this principle they will in future construct at such places in the theatre of war as they consider necessary to themselves, strong fortifications, against which frontal attacks in the open will be quite impossible for any troops. One must not forget that in the past war this system of defence met with brilliant success, although they did not then have at their disposal all the means of destruction with which they are now provided; consequently, armed with all these new appliances, their predictions for the future, based on careful observation, appear more than justified.

But while they exercise their troops in the defence, the Japanese also train them in the attack, in which they fully realise that their enemy will defend himself as strongly as they themselves. Therefore they completely exclude from their tactics any open attacks as impossible, and propose to settle all problems of the offensive by the help of flanking movements by night, and sudden night attacks. Here, precisely as in the defence, their chief care is to preserve the vigour of their strength until the moment of the decisive blow.

In the past war they were thoroughly convinced, by our mistakes, of the truth of Napoleon's words:—

"It is essential to preserve the infantry, for if needlessly exposed for long to the enemy's artillery fire, they will become demoralised and eventually defeated."

This is the fate which the Japanese are preparing for their future enemies, and from which they shield their own troops by every possible means. In order to ensure the success of their night flanking movements and attacks, they propose to employ scouts and spies on a large scale, providing them with all the improvements of complete technique in the form of wireless telegraphy, telephones, signalling apparatus, carrier pigeons, etc.

Russia.

This department, during the last 18 months, has been reorganised and brought to a high state of perfection; but the chief hope of the Japanese in this respect lies in their special corps of scouts and spies.

In the scouting service, apart from this special corps, there are two divisions distributed over Korea who are trained on the same lines, so that the staff of trained men in case of war will be enormous. According to the reports of European witnesses, the troops of the Korean divisions, all of them officers and men alike, by their skill at finding their bearings in whatever locality you please, on the very darkest night, can only be compared with night beasts of prey. Such swift-working scouts will be able to lead the Japanese columns in their night undertakings, and as regards their scouts, sufficient is already known from the experiences of the past year.

It is to some purpose that in the regulations relating to the Japanese military order of the Falcon we find only five occasions on which it is awarded, and three of them are: "The accomplishment of an order in rear of the enemy."

Above this comes "saving the life of a superior officer at great personal risk," and below: "The assassination of the enemy's commander."

It would be possible to bring forward still more data and details of the Japanese preparations for war—the subject is almost inexhaustible; but I consider that I have already said sufficient to cause some anxiety and uneasiness, and meanwhile what are we ourselves doing in this respect?

We have but to remember that the Japanese defeated us when they had in their first line only 160,000 men and 576 field guns, and now they can place in their first line 800,000 troops and 2,384 guns, including field, heavy, and siege.

On reading the foregoing data, the true significance must strike many that in order to complete all these technicalities of war, it follows that the Japanese must possess special qualities.

Such is, indeed, the case, and it is necessary for us, in order to completely and correctly estimate the strength of the Japanese army, to refer, although in the briefest manner, to this aspect of the question.

Turkey.

The following high appointments have been made:—

Vice-Admiral Aarif Hikmet Pasha, who was Minister of Marine in the Government of Kiamil Pasha from July, 1908, to February, 1909, has been again placed at the head of this Department.

The Ministry of War has been entrusted to General of Division Salih Pasha, Commander of the IInd Army Corps. The new Minister of War was a pupil at the Staff College, from whence he went to study in Germany, where he remained four years, returning to Constantinople as a Professor in the Staff College. For three years he served as a Military Attaché, and on his return to Constantinople he was appointed Assistant to Marshal von der Golz, and was employed under his orders in the work of the reorganisation of the Turkish Army. Becoming a suspect under the old *régime*, owing to his marriage with the daughter of Marshal Fuad Pasha, he was exiled to Diarbékir, then to Siwas, where he remained nearly seven years. The revolution of July last year allowed of his return to Constantinople, when he was appointed as Second-in-Command at the General Staff, being nominated last April to the command of the IInd

Turkey.

Army Corps at Adrianople, where he succeeded Nazim Pasha. Salih Pasha enjoys a high reputation in the Army for capacity, knowledge, and energy.

Marshal Abdullah Pasha, late head of Abdul Hamid's military household and late commander of the IVth Army Corps at Erzindjan, has been appointed commander of the IInd Army Corps in succession to Salih Pasha.

An Imperial Iradé has just been issued creating the post of Inspector-General of the Ist, IInd, and IIIrd Army Corps (Constantinople, Adrianople, and Salonika). General Mahmouhd Chefket Pasha, late commander of the IIIrd Army Corps at Salonika, has received the appointment.

Supplementary Credits for the Army and Navy.—The Treasury is about to receive some considerable sums not provided for in the Ordinary Budget for the Empire for 1325 (1909). These are:—

	Turkish.	*English.*
1. The indemnity from Austria-Hungary for the Annexation of Bosnia	£2,500,000	£2,250,000
2. The money and bonds discovered at Yildiz Kiosque	1,600,000	1,440,000
3. The proceeds from the sale of old cannons	300,000	270,000
4. The proceeds from the sale of property belonging to the Civil List	925,000	832,500
Total	5,325,000	4,792,500

There has been some question as to how to dispose of these new resources; but the Council of Ministers has now decided to allot the largest part as Supplementary Credits towards the expenses of the Army and Navy, as follows:—

£(Turkish)3,286,463 (£2,957,817) to the Army.

£(Turkish)341,746 (£307,572) to the Grand Master of the Artillery.

£(Turkish)63,911 (£57,520) to the Navy.

The balance, £(Turkish)1,625,000 (£1,462,500), is to serve to reimburse advances granted to the Government by different financial houses.

A Bill to this effect has been drawn up by the Reporter of the Budget Committee, and has been unanimously adopted by the Chamber of Deputies.—*Revue Militaire des Armées Etrangères.*

CORRESPONDENCE.

The following letter from Colonel Sir E. T. Thackeray was received too late for publication in the September JOURNAL:—

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—The 14th of this month will be the 52nd Anniversary of the assault of the City and Fortress of Delhi, and the day on which Brigadier-General John Nicholson was mortally wounded.

On that day also a most brilliant deed of valour was performed by Lieutenants Duncan Home and Philip Salkeld, and a small party of non-commissioned officers and native Sappers.

Thinking that a reminiscence of this brave act might prove of interest to some of your readers, I have ventured to enclose copies of the official reports by the late Lieutenant Home and the late Colonel R. Baird Smith, the Chief Engineer of the Delhi Field Force.

Yours faithfully,

EDWARD T. THACKERAY,
Colonel, R.E. (Retired).

39, Cheyne Walk, Chelsea,
6th September, 1909.

Lieutenant Salkeld died from the effects of his wounds on the 11th October, 1857, and Lieutenant Home was killed by the accidental explosion of a mine at Fort Malagush, on the 1st October, 1857.

MEMORANDUM FOR LIEUTENANT D. C. HOME.

Lieutenant Home, with Lieutenant Salkeld and four non-commissioned officers, each carrying a 25 lb. bag of powder, will accompany the covering party of rifles that precedes the columns, and will proceed to blow in the Cashmere Gate. The party will be accompanied by a bugler of the 52nd Regiment, and on the explosion causing a successful demolition, Lieutenant Home will cause the bugler to sound the regimental call, which will be the signal for the column to advance and storm the gateway.

If the demolition is not complete, and the breach made quite passable, Lieutenant Home will at once send notice of the fact to Colonel Campbell, and will himself rejoin the column with his party, following the first column by the breach. If from any cause whatever no explosion should take place, intimation should at once be sent to the different divisions by Lieutenant Home.

(Signed.) R. BAIRD SMITH,
Lieut.-Colonel, Chief Engineer.

Dated Camp before Delhi,
14th September, 1857.

FROM LIEUTENANT D. C. HOME TO LIEUT.-COLONEL R. BAIRD SMITH, CHIEF ENGINEER.

SIR,—In accordance with your instructions, I have the honour to forward as detailed an account as possible of the proceedings of the party ordered to blow open the Cashmere Gate of the city of Delhi on the morning of the 14th inst.

Lieutenant Home (Engineers),
Lieutenant Salkeld (Engineers),
3 N.C.O. Sappers,
14 Native Sappers,
10 Punjab Pioneers.

2. The covering party of the 60th Regiment Royal Rifles having advanced in skirmishing order from No. 2 Battery (left) at Ludlow Castle, the explosion party (as per margin), provided with powder bags and ladders, proceeded to the front at the double, halting once under cover to enable stragglers to come up.

On advancing again Sergeants John Smith and Carmichael, and Madho Havildar, all of the Sappers, and myself, arrived at the Cashmere Gate, untouched, a short time in advance of the remainder of the party under Lieutenant Salkeld, having found the palisade gate on the outside of ditch and the wicket of the Cashmere Gate open, and three planks of the bridge across the ditch removed. As Sergeant Carmichael was laying his powder bag he was killed by a shot from the wicket. Havildar Madho was, I believe, also wounded about the same time.

3. Lieutenant Salkeld, carrying the slow match to light the charge, now came up with the remainder of the party, and with a view to enable him to shield himself as much as possible from the fire from the wicket, which was very severe (and the advanced party having deposited the powder bags), I slipped down into the ditch. Lieutenant Salkeld being wounded in the leg from the wicket, handed over the match to Corporal Burgess, of the Sappers, who was mortally wounded while completing the operation. Havildar Tillok was at the same time wounded while assisting Corporal Burgess into the ditch; Sepoy Rambeth was also killed at the same time.

As I was assisting Lieutenant Salkeld into the ditch, I think he was wounded a second time.

4. The charge having exploded, blew in the right (proper right) leaf of the gate, on which I caused the regimental call of the 52nd Regiment to be sounded as the signal for the advance of the storming party. As I was afraid that the bugle might not be heard, I caused the bugler to sound the call three times, after which the column advanced to the storm, and the gate was taken possession of by our troops.

5. I have now only to bring to your notice the gallant conduct of Lieutenant Salkeld, who was wounded while firing the charge; of Sergeant John Smith (Sappers and Miners), who arrived at the gate at the same time as myself; of Bugler Hawthorne, of the 52nd Regiment, who accompanied the party to give the signal for the advance, and who, under a heavy musketry fire, while Lieutenant Salkeld was lying wounded in the ditch, bound up his arm and leg with bandages, and exerted himself in every possible way to ease Lieutenant Salkeld; of Madho Havildar (Sappers and Miners), who arrived at the gate along with myself, and was wounded while placing the powder bags; of Tillok Havildar (Sappers and Miners), who was of Lieutenant Salkeld's party, and was wounded while assisting Corporal Burgess into the ditch; of Jahab Singh, Sepoy (Sappers and Miners), who was one of the party who came up with powder bags along

with Lieutenant Salkeld; of Tooloo Subadar (Sappers and Miners), who was of Lieutenant Salkeld's party, and who, under a very heavy musketry fire, exerted himself in relieving Lieutenant Salkeld's wounds. I regret exceedingly that Government has lost the services of Sergeant Carmichael and Corporal Burgess, who were killed before the fire from the wicket, two more gallant men than whom it is difficult to meet with.

6. I have now given as succinct and correct an account of our proceedings as the excitement and bustle of the moment would allow me to achieve, and I hope that the conduct of the whole detachment under my orders will meet with your approbation.

After the gate was blown in we ought to have advanced with the third assault column towards the Jumna Musjid, but we unluckily missed the column, and only joined it at the Bank Compound.

I have the honour to be, etc.,

(Signed.) D. C. HOME, *Lieutenant, Engineers.*

EXTRACT FROM THE REPORT OF LIEUTENANT-COLONEL BAIRD SMITH, CHIEF ENGINEER, DELHI FIELD FORCE, TO MAJOR-GENERAL WILSON. DATED 17TH SEPTEMBER, 1857.

Para. 13.—The gallantry with which the explosion party under Lieutenants Home and Salkeld performed the desperate duty of blowing up the Cashmere Gate in broad daylight in face of the enemy, will, I feel sure, justify me in making mention of it. The party was composed, in addition to the two officers named, of the following:—Sergeant John Smith, Sergeant A. B. Carmichael, Corporal F. Burgess (Sappers and Miners), Bugler Hawthorne (H. M.'s 52nd Regiment), fourteen native Sappers and Miners, ten Punjab Sappers and Muzbis.

Covered by the fire of Her Majesty's 60th Rifles, the party advanced at the double towards the Cashmere Gate, Lieutenant Home and Sergeants Smith and Carmichael, and Havildar Madho (all of the Sappers), leading and carrying the powder bags, followed by Lieutenant Salkeld, Corporal Burgess, and a section of the remainder of the party. The advance party reached the gate unhurt, and found that part of the drawbridge had been destroyed; but passing across the precarious footing supplied by the remaining beams, they proceeded to lodge their powder against the gate.

The wicket was open, and through it the enemy kept up a heavy fire upon them. Sergeant Carmichael was killed while laying his powder, Havildar Madho being at the same time wounded. The powder being laid, the advance party slipped down into the ditch to allow the firing party under Lieutenant Salkeld to perform its duty.

While endeavouring to fire the charge Lieutenant Salkeld was shot through the leg and arm, and handed over the slow match to Corporal Burgess, who fell mortally wounded just after he had successfully accomplished the arduous duty. Havildar Tillok Singh, of the Sikhs, was wounded, and Ramboth, Sepoy, of the same corps, was killed during part of the operations. The demolition having been most successful, Lieutenant Home, happily unwounded, caused the bugler to sound the regimental call of the 52nd, as the signal for the advancing columns.

Fearing that amid the noise of the assault the sound might not be heard, he had the call repeated three times, when the troops advanced and

carried the gateway with complete success. I feel certain that a single statement of this devoted and glorious deed will suffice to stamp it as one of the noblest on record in military history.

Its perfect success contributed most materially to the brilliant result of the day, and Lieutenants Home and Salkeld, with their gallant subordinates, European and native, will, I doubt not, receive the reward to which valour before the enemy so distinguished as theirs has entitled them. I have since heard that Lieutenant Salkeld is dead, but have not seen it in the returns myself.

NOTE.—The Victoria Cross was conferred upon Lieutenants Home and Salkeld, Sergeant John Smith, and Bugler Hawthorne, of the 52nd.

NAVAL AND MILITARY CALENDAR.

OCTOBER, 1909.

4th (M). H.M.S. *Hindustan* paid off at Portsmouth.

5th (T). H.M.S. *Hindustan* recommissioned at Portsmouth for Home Fleet.

15th (F). H.R.H. The Prince of Wales opened the New Harbour at Dover.

18th (M). H.M.S. *Inflexible* arrived at Spithead from New York.

19th (T). H.M.S. *Venerable* commissioned at Portsmouth for Atlantic Fleet.

20th (W). XIVth Brigade, R.H.A. and XIXth Brigade R.F.A. embarked at Southampton for South Africa.

23rd (Sat). The Tsar met King of Italy at Racconogi.

25th (M). Anniversary of the Battle of Agincourt. Presentation by His Majesty the King of Colours to the Royal Regiment of Norfolk Yeomanry and the 4th and 5th Battalions of the Norfolk Regiment.

28th (Th). Launch of first-class armoured cruiser *Indefatigable* at Devonport.

" " Launch of second-class cruiser *Gloucester* from Messrs. Beardmore's Yard at Dalmuir on Clyde.

" " Launch of first-class battleship *Mirabeau* at Lorient for French Navy.

29th (F). Revolt of Greek Torpedo Flotilla and Seizure of Arsenal at Salamir by the Mutineers under Lieutenant Typaldos.

30th (Sat). Launch of second-class cruiser *Liverpool* from Messrs Vickers' Yard at Barrow.

" " Greek Naval Mutiny collapsed.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC.—*Boletín del Centro Naval.* Buenos Aires: July and August, 1909.—"Naval Hygiene." "Proposal for the Employment of Dirigible Balloons in the Navy for Scouting." "A Radiographic Network and Lighthouses on the Coast." "Promotions by Selection in Time of Peace." "Modern Battleships."

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 11. Pola: November, 1909.—"Deep Sea Diving" (*continued*). "Armour Plates and Armour-Piercing Projectiles." "Flashlight-Torsiometer." "Russian Naval Estimates for 1909." "The Combined Manœuvres of the French Mediterranean and Northern Squadrons, 1909." "The Conclusions of the French Superior Council of the Navy in Regard to the Development of the Fleet and Dockyards." "Prize Firing in the Italian Fleet." "The Cabin Cruiser *Pioneer*." "The New Distribution of the Fleet in France." "List of those Powers which Accepted the Declaration of Paris of 1856."

BRAZIL.—*Revista Maritima Brazileira.* Rio de Janeiro: August, 1909.—"The Metallurgical Industry in Brazil." "The "Deslandes" Aeroplane." "Practical School of Artillery, "No. 3." " "The Brazilian Navy." "The Present State of French Naval Artillery." "Time of Construction of Modern Ships of War."

CHILI.—*Revista de Marina.* Valparaiso: July, 1909.—"Protection of the National Mercantile Marine." "What is the Best Armament for Our Ships of War?" "The Naval General Staffs of the Principal Naval Powers." "The Crisis in the French Navy." "Political and Military Study of Japan" (*continued*). "The Behaviour of Cordite."

FRANCE.—*Revue Maritime.* Paris: August, 1909.—"Aviation." "Battle Practice at Sea." "The Combined Manœuvres of the Italian Navy and Army."

La Marine Française. Paris: October, 1909.—"The Enquiry into the State of the Navy" (*continued*). "The Reforms of the New Minister of Marine." "The Boiler Question." "Their Naval Progress." "The Promotion of Officers in the Navy." "The Duty of the Chief of the Staff."

La Vie Maritime. Paris: 10th October, 1909.—"The Appointments to High Commands." "The Detractors of the Navy." "The Success of the Large Tube Boilers." "Naval Gunnery." "The Budget of 1910."

15th October.—"Our Building Yards." "New High Appointments." "The Cost of the Navy and M. Doumer's Report on the Naval Estimates for 1910." "Our Future Battleships." "The Firing at the *Iéna*." "An Italian Opinion of the French Fleet." "New Type of English Submarine."

Le Yacht. Paris: 2nd October, 1909.—"The Genesis of Naval *Matériel*" (*concluded*). "Yachting Notes." "The Navy and Aeronautics." "The German Battleship *Schleswig-Holstein*." "Honours and Precedence." 9th October.—"Proposed New Constructions." "Yachting Notes." "The Evolution of the Austrian Navy." "The Raising of Sunken Ships." 16th October.—"The Cadets." "Yachting Notes." "The Evolution of the Austrian Navy" (*continued*). "Hudson's Ship, the *Halve Maen*." "Motors at the Exhibition of Aerial Locomotion." "The English Submarine "D.1." " 23rd October.—"The Reform of Tactics." "Yachting Notes." "The Beginning of Steam Navigation." "The Evolution of the Austrian Navy" (*concluded*). 30th October.—"The Reorganisation of the Administrative Services of the Navy." "Yachting Notes." "The Gabet Automobile Torpedo."

Le Moniteur de la Flotte. Paris: 2nd October.—"New Constructions." "The Employment of Cadets." "The Budget for 1910." "The Torpedo School Division." 9th October.—"The Net Cost of New Constructions." "New Reforms: Reorganisation of the Superior Council of the Navy." 16th October.—"Factories and Fleet." "Reforms Continued." "Duties of the Vice-Admirals, Inspector-Generals of the Fleet." 23rd October.—"Annexe of the New Constructions." "The Programme of Admission to the Naval School." "The Navy in Parliament." 30th October.—"The New Tactics." "The Pay of Officers."

GERMANY.—*Marine Rundschau.* Berlin: November, 1909.—"The Political Crisis in England." "History and Meaning of the "Drago Doctrine." " "The Hudson-Fulton Celebrations." "Fulton's Submarine." "The Provision of an International Book of Maritime Law."

ITALY.—*Rivista Marittima.* Rome: September, 1909.—"The Education of the Young and the Royal Naval Academy." "Remarks on the Solution of the Trangle of Position without Trigonometrical Calculations." "The Report of the Commission of Enquiry into the State of the French Navy." "The Occupation of Nice and the Bombardment of Oneglia."

PORTUGAL.—*Revista Portugueza, Colonial e Maritima.* Lisbon: August, 1909.—"Life in the Forest." "Treaty of Commerce with Germany." "Genealogical and Biographical *Data* of some Fayal Families."

Annaes do Club Militar Naval. Lisbon: September, 1909.—"Some Ideas about the Organisation of the Service Afloat." "A Probable Enemy." "The Instruction and Education of the Officers of the Fleet." "The Evolution of the Torpedo-boat." "The War in Guinea: The Island of Bissau."

SPAIN.—*Revista General de Marina.* Madrid: October, 1909.—"New Possible Causes of Explosions of Powders." "Astronomy Applied to the Navigation of Fast Ships." "The Struggle of the Naval Artillery and Projectiles Charged with High Explosives." "The U.S. *Dreadnoughts.*" "The *Nautilus* at Montevideo"

MILITARY.

AUSTRIA-HUNGARY.—*Danzer's Armee-Zeitung.* Vienna: 7th October, 1909.—"Fleet Paroxysm." "Echoes of the Kaiser-Manœuvres." "Krupp's Monopoly." 14th October.—"Enough of Criticism!" "The Question of Umpires in the Army." "Maxwell's Wellington." 21st October.—"The *Rapprochement* between Russia and Italy." "We Need Criticism!" "The Demands of Our Navy." "The Italian *Revanche* Idea." "The New Musketry Training of the *Ersatz-Reservists.*" "The Telephone Equipment of Our Infantry." 28th October.—"What is to be Learnt from the Ferrer Incident?" "A New Edition of Part I. of the Service Regulations Required." "The Spanish and the Austrian Military Judicial Procedure."

Streffleur's Militärische Zeitschrift. Vienna: October, 1909.—"Garibaldi's Fight against Austria." "Border Fighting." "Experiences of the Macedonian Reform-Gendarmerie Officers." "An Applicable Example of the Attack on a Fortified Field Position." "Fire Fight of the Fortress Artillery with the Repeating Carbine." "A Voice from the Mountain Artillery." "The Changes in the Position of Officer-Aspirants as regards the Military Penal Code." "The Terrain Instruction at the Military Schools." "Communications from the Army Musketry Schools."

Kavalleristische Monatshefte. Vienna: October, 1909.—"From the Diaries (1859 and 1866) of Graf zur Lippe-Deissenfeld." "What the Fashion Decrees!" "Raids." "The Cavalry Attack on 24th June, 1866." "Cavalry Studies." "Thoughts on the Training of Remounts." "The Psychology of the Horse." "The Technical Methods of the Intelligence Branch of Modern Armies, in especial as regards Transmission of Orders." "The Cavalry Spirit in the Time of Napoleon." "Remounts in France and Germany." "A Russian Criticism of the Swedish Cavalry." "Tactical Problems for the Cavalry Officer."

BELGIUM. — *Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th September, 1909.—"The Cavalry Divisions at the Imperial German Manœuvres, 1908" (*continued*). "Reorganisation of the French Artillery" (*continued*). "Manœuvre Regulations for the German Army (22nd March, 1908)" (*concluded*). 30th September.—"The Cavalry Divisions at the Imperial German Manœuvres, 1908" (*concluded*). "Reorganisation of the French Artillery" (*concluded*).

FRANCE.—*Journal des Sciences Militaires.* Paris: 1st October, 1909.—"Two Manœuvres with Real Firing at Sissonne in 1908." "War and Compulsory Service" (*continued*). "Infantry Support of Artillery." "Organisation and *Encadrement* of Infantry" (*concluded*). "The Question of Light Artillery for the Batteries of Cavalry Divisions." 15th October.—"Two

Manœuvres with Real Firing at Sissonne in 1908" (*concluded*). "For the Great Force of the Army and the Better Health of the Nation." "War and Compulsory Service" (*continued*). "Advantages and Inconveniences of the New Gymnastics" (*concluded*). "In Morocco." "Importance of the Advance in the Japanese Tactics."

Revue d'Infanterie. Paris: September, 1909.—"Battle Firing." "The New Manœuvre Regulations of the Spanish Infantry" (*concluded*). "The Infantry Combat: The Moral Factor" (*concluded*). "The Military Salute in France and Abroad." "The Japanese Army: Transmission of Orders and Reports in the Field."

Revue de Cavalerie. Paris: September, 1909.—"Cavalry: The Regimental School (Mounted Battle Training)." "Our Cavalry in the Next War (General von Bernhardi)" (*continued*). "Two Proposals for the Reorganisation of the Cavalry." "A Study on the Precociousness of the Cavalry Horse."

Revue d'Artillerie. Paris: August, 1909.—"Microscopic Examination of Skins." "The Theory of Aeroplanes." "Close Defence of a Covered Artillery Position."

Le Spectateur Militaire. Paris: 1st October, 1909.—"New Artillery Tactics." "Strategical Considerations on the Campaign of 1800" (*continued*). "Manœuvring in Woody Country" (*continued*). "Letters of Major Kretschman" (*continued*). 15th October.—"New Artillery Tactics" (*concluded*). "Strategical Considerations on the Campaign of 1800" (*continued*). "Manœuvring in Woody Country" (*concluded*). "Principles which should Serve as a Base for the Organisation Laws" (*continued*). "Covering Manœuvres" (*continued*).

Revue Militaire Générale. Paris: September, 1909.—"Observations *à propos* of the Regulations of 22nd March, 1908, on Field Service in the German Army." "Method of Instruction for Battle." "The Brevet of the Three Arms." "The Covering Detachment in Mountains" (*concluded*).

Revue d'Histoire. Paris: October, 1909.—"The Dromedary Regiment." "The Campaign of 1813: The Preliminaries." "The Prussian Army after the War of Deliverance." "The Mitrailleuse in 1870" (*continued*). "The War of 1870-71: The National Defence in the Provinces" (*continued*).

Revue Militaire des Armées Etrangères. Paris: October, 1909.—"Legislative Military Work in Italy from January, 1907, to October, 1909." "The U.S. Army in 1909" (*continued*). "Subaltern-Grade Schools in the Norwegian Army."

GERMANY.—*Militär-Wochenblatt.* Berlin: 2nd October, 1909.—"General von Schlichting's Birthday." "The Fortress in War." 5th October.—"Prince Albrecht of Prussia." "Two Hundred and Fifty Years Ago: No. 9.—The Great Elector in Upper Pomerania against the Swedes." "The Fortress in War" (*continued*). 7th October.—"The Fortress in War" (*continued*). "A New Tactical Handbook." "Two Hundred and Fifty Years Ago" (*continued*). 9th October.—"Strengthened Cavalry Brigades." "The Fortress in War" (*continued*). "A Soldier's Paper." 12th October.—"The Fortress in War" (*concluded*). "Race Winners and

the Breeding of Thoroughbreds." "The Chilian Army." 16th October. —"Ulm and Metz." "Recruit Training." "Fortress Exercises" (*concluded*). "The Present Stage of Development of the Russian Military Schools." 19th October.—"Port Arthur" (*continued*). "The Spanish War in Morocco" (*continued*). "Recruit Training" (*concluded*). 21st October.—"The Handling of Cavalry in Battle against Infantry." "What Lessons are to be Learnt from the Fighting Round Port Arthur in the matter of Coast Fortifications" (*continued*). 23rd October.—"The Spanish War in Morocco" (*continued*). "The Present Stage of Development of the Russian Military Schools" (*continued*). 26th October.—"A Hundred Years Ago: The Tyrol" (*continued*). "The Danish Army according to the New Legislation." "A Geographical Journal." 28th October.—"General von Schlichting: Obituary Notice." "The English Manœuvres." "A Hundred Years Ago: The Tyrol" (*concluded*). 30th October.—"The 70-Years' Military Jubilee of H.R.H. the Prince Regent Leopold of Bavaria." "The Commanding Generals of the German Army from 1889 to 1909" (*continued*). "The Present Stage of Development of the Russian Military Schools" (*concluded*).

Artilleristiche Monatshefte. Berlin: October, 1909.—"Ballistic Observations." "The Disadvantages of Repeated Changes of the Regulations." "Six Fire-Problems for Field Batteries." "The French Artillery in Night Fighting." "The Question of Fighting Airships." "The Field Howitzer Question." "Foot Artillery Considerations."

Jahrbücher für die Deutsche Armee und Marine. Berlin: October, 1909.—"New French Tactics" (*concluded*). "Why Cannot the Howitzer become the Principal Weapon of the Field Artillery?" "Fortress War in Theory and Practice: Belfort—Port Arthur." "What Changes in Organisation and Armament have the Experiences of the War in East Asia brought the Japanese" "The Education of the Soldier" (*concluded*).

ITALY.—*Rivista di Artiglieria e Genio.* Rome: September, 1909.—Has not yet been received.

Rivista Militare Italiana. Rome: 16th October, 1909.—"Our Infantry Tactics." "Relation between Geography and History" (*concluded*). "Things African." "The Military Decadence of the Most Serene Republic of Venice." "The Armies of Europe." "A New and Important Chapter, etc." "Tripolitana." "The Volunteers." "The Moulding of the Military Character." "Notes on Manœuvres on Interior Lines." "The Valley of Susa."

SPAIN.—*Revista Técnica de Infantería y Caballería.* Madrid: 1st September, 1909.—"Napoleon and the Peninsular War." "The Principal Arms and the Auxiliaries in the Struggle for Positions in the Field." "A Grand Diplomatic Soldier" (*continued*). "The Present Times and the Grand War." "The Roll of Honour under the Empire." "Report on the Musketry Course by Infantry First-Lieutenants at the Central Musketry School in 1907" (*continued*). "The Gun: Its Physiology and its Psychology." 15th September.—"Napoleon and the Peninsular War. No. 2." "A Grand Diplomatic Soldier" (*concluded*). "The Present Times and the Grand War" (*continued*). "Report on the Musketry

Course by Infantry First-Lieutenants at the Central Musketry School in 1907" (*continued*). "The Roll of Honour under the Empire" (*continued*). "The Principal Arms and the Auxiliaries in the Struggle for Positions in the Field" (*continued*). "Aerostation in Our Army."

Revista Científico- Militar y Bibliotéca Militar. Barcelona: 10th October, 1909.—"The Operations from the 16th to the 30th September." "The Equation of the Modern Army." "The Siege of Baler, Judged in the View of U.S. Army Officers." "Spain in Morocco."

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: October, 1909.—"The Swiss in Italy" (*concluded*). "Training Regulations for the Swiss Infantry." "The French Army Corps Manœuvres in the Bourbonnais in 1909." "Sheer Line Bridges" (*concluded*).

NOTICES OF BOOKS.

The Life and Letters of James Wolfe. By BECKLES WILLSON. (Illustrated.) London: Heinemann. 18s. net.

We have already several biographies of the victor of Quebec. The memoir by Robert Wright, published some fifty years ago, is an interesting and well-written book, but is now rarely to be found; the short biography by Mr. A. G. Bradley is of high merit; and that written quite recently by Mr. Salmon is interesting and compact.

The career and character of General Wolfe form, however, so attractive and important a study to Englishmen that there is still room for Mr. Beckles Willson's biography, by far the fullest and most comprehensive yet published. Mr. Willson, too, is an enthusiast on the subject of his hero, being by birth a native of the great Dominion which Wolfe's victory added to the Empire; and he has not only devoted many years to the study of Wolfe's career, but has actually settled in his birthplace, and lives in the very house in which he was born. Thanks to these circumstances, Mr. Willson has been able to obtain an extraordinarily complete collection of Wolfe's letters, which are of the highest merit and interest; their preservation showing how fully his greatness was appreciated by his family and friends. Wolfe was, as Mr. Willson shows, not only a great soldier and a high-minded patriot, but a man of great charm of character, who exercised in his too short lifetime a strong influence over all persons with whom he was brought in contact, and in spite of a somewhat hasty temper and an occasional acerbity of speech, was almost universally beloved.

The minute account given by Mr. Willson of the family history, education, and early life of Wolfe is of great interest, and affords innumerable sidelights on the social and military history of the reign of George II., which almost exactly coincided with the period of Wolfe's life.

Born in 1727, the son of a distinguished officer who had served through the wars of Queen Anne, Wolfe entered the army at the age of

fourteen and almost immediately accompanied his regiment, the 12th Foot, to the war of the Austrian succession. When only sixteen years old he distinguished himself at the Battle of Dettingen, and was made Adjutant of his regiment. He served in the Supression of the '45, was wounded and again highly distinguished himself at Laufeld in 1747, and became a Major in the 33rd Regiment in the same year. Twelve months later he received the officiating command of the 20th Regiment, and in March, 1750, at the age of twenty-three, was promoted Lieut.-Colonel of that regiment. This extraordinarily rapid promotion was the result of merit alone.

Wolfe commanded the 20th for eight years, and by his firm discipline, progressive system of education of officers, and the great care which he bestowed on his men, made his regiment the model of the whole army. His independence of character led him to introduce many improvements in organisation, drill, and musketry which have formed a permanent part of our military system.

In 1758 Wolfe commanded a brigade at the siege and capture of Louisbourg, in Nova Scotia, and in the following year he was selected by Pitt for the command of an independent force of 9,000 men, which was to take part in a combined operation for the capture of Quebec from the French Army, under the Marquis de Montcalm.

The story of Wolfe's difficulties and disappointments, of his final victory, and of his death at the moment of triumph, is one of unfailing interest. It is told in full detail and with a wealth of additional information by Mr. Beckles Willson. Among other points elucidated, there is full proof of the fact that the final choice of a point of attack which secured victory, in the face of difficulties that seemed insurmountable, was Wolfe's own. This has of late years been disputed, but Mr. Willson makes it clear that all the credit of the victory belongs to Wolfe, just as all the blame would have been his had his attack failed.

This very full and interesting study of the life of one of England's greatest soldiers and most devoted sons is cordially recommended to the readers of this JOURNAL. The book is one that cannot be read without profit, and the admirable collection of illustrations with which it is enriched, lends it no small additional charm.

The Army Annual for 1909. Edited by Major B. F. S. BADEN-POWELL, late Scots Guards. The Army Press. 7s. 6d.

The second issue of this useful military work of reference will be generally welcomed, although its publication so late in the year as August is somewhat to be regretted. In addition to a good deal of general information on Army matters, there is an interesting *résumé* by Colonel H. C. Wylly, C.B., of the "Manœuvres of the Year and the Lessons to be Learnt from them," dealing not only with our own but with those in France, Austria, Germany, and Italy. Colonel Wylly supplied a similar *résumé* last year, and the Editor is to be congratulated on having secured the services of so competent a writer on military matters as Colonel Wylly is recognised to be. The Editor contributes himself a short paper on the "Progress of Aerial Navigation," in which subject he is an expert, and we must hope that next year he will be able to devote

more space to it, in view of its rapidly increasing importance. Another useful chapter is devoted to a *précis* of the last Report of the Army Medical Department, which, it is satisfactory to note, shows that the health of the British Army compares favourably with that of the Armies of the other Great Powers. The chapter in the Report on the Physical Training of Recruits is of especial interest. Summing up, the Director-General points out: "There is no rapid method of making a man capable of withstanding prolonged exertion. He must be well fed, and his work must be tempered to his habits. The smoker and the man who indulges in alcohol cannot, others things being equal, get into condition so quickly as the non-smoker and abstainer, and the former class will never attain such a pitch of physical excellence as the latter; therefore, the training should in all cases be very gradual, of a mild character, and to some extent kept up during military service." In conclusion, Sir A. Keogh lays down that: "Men doing hard work require an abundant supply of fresh air. Physical training, therefore, should be carried on as much as possible in the open air. Gymnasia should have the utmost ventilation that can be provided, and should be artificially warmed in winter.

"The mind of the recruit should be developed as well as his body. Many of the physical exercises can be arranged so that the men become interested in the work."

Another chapter is devoted to the principal military inventions of the past year; while the First Year of the Territorial Force is also dealt with.

Altogether, Major Baden-Powell is certainly to be congratulated on the results of the trouble he has evidently taken over his present compilation.

PRINCIPAL ADDITIONS TO LIBRARY, OCTOBER, 1909.

Questions Militaires d'Actualité—3e Serie. Les Grandes Manœuvres en 1908, *La Psychologie Militaire de Napoleon, etc.* By General H. BONNAL. Crown 8vo. 3s. (R. Chapelot et Cie.) Paris, 1909.

Studies in Applied Tactics. By Lieut.-General G. VON ALTEN. Authorised Translation by Major C. H. BARTH, U.S.A.. 8vo. 9s. (Franklin Hudson Publishing Co.) Kansas City, n.d.

Napoleon's Brothers. By A. HILLIARD ATTERIDGE. 8vo. 18s. (Methuen & Co.) London, 1909.

The Conquest of the Air. By ALPHONSE BERGET. 8vo. 12s. 6d. (William Heinemann.) London, 1909.

A Beau Sabreur, Maurice de Saxe, Marshal of France: His Loves, His Laurels, and His Times, 1696-1750. By W. R. H. TROWBRIDGE. 8vo. 15s. (T. Fisher Unwin.) London, 1909.

The Life and Letters of James Wolfe. By BECKLES WILLSON. 8vo. 18s. (William Heinemann.) London, 1909.

The English Constitution. By W. BAGEHOT. Crown 8vo. 3s. 6d. (Kegan Paul, Trench, Trübner & Co., Ltd.) London, 1905.

The Elements of Commercial Law. By H. W. DISNEY. Crown 8vo. 2s. 6d. (Macdonald & Evans.) London, 1908.

British Railways, their Organisation and Management. By H. M. ROSS. Crown 8vo. 5s. (Edward Arnold.) London, 1904.

Ports and Docks, their History, Working and National Importance. By DOUGLAS OWEN. Crown 8vo. 2s. 6d. (Methuen & Co.) London, 1904.

Charles XII., and the Collapse of the Swedish Empire, 1682-1719. By R. NISBET BAIN. Crown 8vo. 5s. (G. P. Putnam's Sons.) New York, 1906.

La Campagne du Maréchal Saxe dans les Flanders. Par le Capitaine HENRY PIEHAT, Publié sous la direction de la Section Historique de l'Etat Major de l'Armée. 8vo. 12s. (R. Chapelot et Cie.) Paris, 1909.

Life in the Merchant Marine One Hundred Years Ago. By SAMUEL JEFFERSON, Master Mariner. Crown 8vo. (Presented.) (Charles North.) London, 1905.

Studies in Practical Topography. By Colonel H. T. CROOK. 8vo. (Presented.) (Manchester Tactical Society.) Manchester, 1909.

Great and Greater Britain. By J. ELLIS BARKER. 8vo. 10s. 6d. (Presented.) (Smith, Elder & Co.) London, 1909.

An Almain Armourer's Album. Selections from an original MS. in the Victoria and Albert Museum, South Kensington. With introduction and notes by Viscount DILLON. Imp. fol. 63s. London, 1905.

Letters from the Peninsula, 1808-1812. By Lieut.-General Sir WILLIAM WARRE, C.B., K.T.S. Edited by his nephew, the Rev. EDMOND WARRE, D.D., C.B., M.V.O. 8vo. 10s. 6d. (Presented.) (John Murray.) London, 1909.

Military History for Examinations, 1910-11—*Questions on the Campaign in Virginia from April,* 1861, *to May,* 1863. by Lieut.-Colonel H. M. E. BRUNKER. Crown 8vo. 1s. (Presented.) (Forster, Groom & Co., Ltd.) London, 1909.

Rough Notes by an Old Soldier during Fifty Years' Service. By Major-General G. BELL. 2 vols. 8vo. 10s. (Day & Son, Ltd.) London, 1867.

Memoirs of George Elers, Captain in the 12th Regiment of Foot (1777-1842). Edited from the original MSS. by Lord MONSON and G. LEVESON-GOWER. 8vo. 12s. (William Heinemann.) London, 1903.

L'Espionage Allemand en France. By PAUL LANOIR. Crown 8vo. 2s. 6d. (Cocnaud et Cie.) Paris, 1908.

Memoirs of Theobald Wolfe Tone. Written by himself. Comprising a complete journal of his negotiations to procure the aid of the French for the liberation of Ireland, with selections from his diary whilst agent to the Irish Catholics. Edited by his son, WILLIAM THEOBALD WOLFE TONE. 2 vols. 8vo. (Henry Colburn.) London, 1827.

Armour and Weapons. By CHARLES FFOULKES. With a preface by Viscount DILLON. 8vo. 6s. 6d. (Presented.) (Clarendon Press.) Oxford, 1909.

Stray Notes on Military Training and Khaki Warfare. By Field-Marshal Sir CHARLES BROWNLOW. 8vo. (Presented.) (Women's Printing Society, Ltd.) London, 1909.

The Heart of the Antarctic. By E. H. SHACKLETON, C.V.O. 2 vols. 8vo. 36s. (William Heinemann.) London, 1909.

Across Papua. By Colonel KENNETH MACKAY, C.B. 8vo. 7s. 6d. (Witherby & Co.) London, 1909.

Kashmir. Described by Sir FRANCIS YOUNGHUSBAND, K.C.I.E. Painted by Major E. MOLYNEUX, D.S.O. 8vo. 20s. (Adam & Charles Black.) London, 1909.

Economic Inquiries and Studies. By Sir ROBERT GIFFEN, K.C.B. 2 vols. 8vo. 21s. (George Bell & Sons.) London, 1904.

Britain at Bay. By SPENSER WILKINSON. 8vo. 6s. (Constable & Co. Ltd.) London, 1909.

RECENT PUBLICATIONS OF MILITARY INTEREST.

COMPILED BY THE GENERAL STAFF, WAR OFFICE.

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Part II. Section I. Books ... ... PAGE. 1539

PREFATORY NOTE.

This Pamphlet will be issued quarterly, in April, July, October and January. Its purpose is to draw the attention of Officers to British and Foreign publications of Military interest which are likely to assist them in their professional work. Copies of the pamphlet will be distributed to the Headquarters of Commands, Educational Establishments, Units and Reference Libraries.

PART II.

SECTION I.

NOTE.—1. *When the price is not given in Part II., Section I., it is not known.*
2. *In Part II., Section I., books whose titles are given in foreign languages as well as in English, are published in those languages, and are not translated.*

AERIAL NAVIGATION.

Aviation. (L'aviation.) By Captain F. Ferber, French Army. 250 pp., with numerous diagrams. 8vo. Paris, 1908. Berger-Levrault. 4/-.

Captain Ferber has done, perhaps, more than anyone else in France to develop the art and science of aviation, and his opinions deserve careful study. (In France the term "aviation" is confined to the flight of machines heavier than air.)

The book deals exclusively with aeroplanes (four pages only being devoted to remarks on ornithopters and helicopters), and is divided into two parts, the first part being historical and descriptive, and the last part mathematical. This historical and descriptive part commences with a lucid summary of the underlying principles of the flight and stability of aeroplanes. This occupies fifteen pages. Then follow one hundred and seventeen pages covering the history of the subject from Cayley (1809) to the present day. This portion is very fully illustrated and includes short accounts of the gliding experiments of Lilienthal, Pilcher, Ferber and the Wrights.

The more modern historical portion is confined to French experiments. A short *résumé* is given of the principal points considered to be established by the author's own experiments and finally about twenty-one pages are devoted to some interesting anticipations, some of which have already been realised.

The four pages devoted to the use of flying machines in war should be read, being as they are the views of an artillery officer who has made a thorough theoretical and practical study of aeroplanes.

There is a short note on some details of construction, followed by the mathematical portion, which occupies eighty-two pages. Conclusions based on mathematical argument cannot, in most cases, be accepted as final, owing to the uncertainty that exists as to several of the premises, but the author's mathematical analysis is worth studying. The theory of the screw propeller is well treated.

NOTE.—The author, a most brilliant officer, has since paid for his devotion to aviation with his life, having met with a fatal accident whilst making a flight with his aeroplane at Boulogne.

The Aeroplane of the Brothers Wright. (L'aéroplane des Frères Wright). 30 pp., with diagrams. 8vo. Paris, 1908. Berger-Levrault. -/10.

This book contains:—

(1) A report presented by the Brothers Wright to the Aero Club of America in 1906, giving details of their progress to date.

(2) The conditions of contract for the supply of an aeroplane, issued by the Army Board of Ordnance and Fortifications of the U.S.A. in 1908.

(3) Particulars of trials carried out by Orville Wright at Fort Meyer in September, 1908, up to the time of the accident resulting in the death of Lieutenant Selfridge.

(4) Particulars of the French patent specification deposited by the Wright Brothers in March, 1904, together with drawings and some explanatory information.

(5) Description of the machine with which Wilbur Wright made his first experiments in France in 1908.

ARTILLERY.

Austro-Hungarian Artillery. Riding and Driving Manual. (Reit- und Fahrinstruktion für die k.u.k. Artillerie). Official. 166 pp., with several illustrations. 8vo. Vienna, 1909. k.u.k. Hof- und Staatsdruckerei. 1/-.

The study of this manual is recommended not only to artillery but also to cavalry officers.

The care taken by the Austrians in the training both of horse and rider is probably well known, but while the cavalry manual of some years ago gave in detail the system of training peculiar to the Austrians, this present publication deals with the question perhaps even more carefully and has the advantage of being the latest official authority. The instruction of the recruit is, as before, divided into progressive periods and a similar procedure is followed in the case of the remount. As is customary throughout the Austro-Hungarian service, the recruit in the first period of his instruction is not permitted to touch the reins.

Jumping, and the passage of obstacles when driving, are treated at some length. With regard to the former, however, it is laid down that for troop-horses no jumps shall be more than 2 feet 6 inches high or more than 5 feet broad, as it is held that "if larger obstacles are taken, many horses lose heart, the weaker ones being ruined; if the horses can make sure of readily taking those specified, then in case of need they will be able to overcome more formidable ones if properly handled." Vaulting and the swimming of horses are also dealt with, in the latter case the horse is guided with one hand, the other seizing the mane about two hands' breadths above the withers.

Field artillery is taught to drive at the gallop, a special section at the end of the book dealing with the various limitations imposed on the heavy howitzer batteries.

Two Lectures on Field Artillery. (Deux conférences sur l'Artillerie de campagne). By Captain Héring. 80 pp. 8vo. Paris, 1909. Chapelot. 1/4.

The primary object of the two lectures which have now been reproduced in book form was to make officers of other arms familiar with the practical working of artillery in the field. Captain Héring, therefore, treats his subject in a plain and straightforward manner, and his language, as far as may be, is devoid of technicalities. In the introductory remarks to his first lecture he points out how essential it is, if mutual co-operation is to be secured, that all officers should be acquainted with the principles which govern the handling of arms other than that to which they belong. He contends that the science of artillery tactics cannot be grasped without a knowledge of the weapon with which the artillery is armed, and therefore devotes the first lecture to a description of the 75-c.m. gun, its technical employment and efficacy. The second lecture treats of the tactical employment of artillery, and its joint action with the other arms. To infantry officers in particular the lectures afford useful and instructive reading.

Considerations regarding Artillery Work in Sieges. (Considérations sur les services de l'artillerie dans les sièges.) By Colonel Rouquerol. 68 pp. 8vo. Paris, 1908. Chapelot. 1/2.

Colonel Rouquerol considers that insufficient importance is attached to the study of siege warfare, seeing that a large army could operate in no European theatre of war without moving in close proximity to some well-armed permanent fortification, the capture of which would necessitate the employment of a fully-equipped siege train.

He divides his work into two portions, the first dealing with the period prior to the opening of fire by the siege batteries, the second with that culminating in the occupation of the first line of defence.

The discussion regarding the best means of obtaining satisfactory observation of fire is very detailed, and of considerable interest to all artillery officers.

As might be expected, frequent reference is made to the siege of Port Arthur, notably as illustrating the necessity for careful preliminary reconnaissance.

The Employment of Field Artillery. (Impiego dell' Artiglieria Campale). By Colonel G. Castellani. 60 pp. 12mo. Rome, 1908. Vaghera. 1/2.

This book contains some useful information as to the artillery methods of the leading European Powers. A study is made of the leading lessons as regards artillery to be drawn from the Russo-Japanese War, a special effort being made to throw light on the difficult question of co-operation between the three arms.

BOOKS OF REFERENCE.

The Rise and Progress of the British Explosives Industry. Published by the Explosives Section of the VIIth International Congress of Applied Chemistry, and edited by E. A. Brayley Hodgetts. 418 pp., with numerous illustrations. 4to. London, 1908. Whittaker. 15/-.

This elaborate compilation contains a complete history of the manufacture of explosives in this country, and traces the development and uses of various kinds of explosives from their discovery up to the present day.

The subject is dealt with in two parts, namely, "Historical Part" and "Descriptive Part." The latter contains a description of "Existing Government establishments" and of "Private establishments," and gives an account of their origin and subsequent history. The "Historical Part" is of greater interest from a military point of view and contains special articles by recognized authorities on the various subjects dealt with.

As a book of reference this work may be considered of great interest.

Topography of the Duchy of Schleswig. By H. Oldekop. 1092 pp. (including index and appendices). 4to. Kiel, 1906. Lipsius and Tischer.

This book is an exhaustive treatise on the geography, topography, and resources of Schleswig. It commences with a short history of the Duchy from the time of Charlemagne to the present day. The author impresses on his readers the fact that even in these early ages Schleswig was subject to Germany. The next portion contains a geographical summary followed by a list of districts and places arranged in alphabetical order, with a paragraph of topographical and miscellaneous information about each of them. Next follow chapters on the division of the country into districts, conditions of land tenure, and present condition of agriculture. The remaining nine hundred pages consist of ten appendices, each of which is devoted to a district (Kreis). The parishes in each district are arranged alphabetically, and some information is given regarding their area, population, and resources.

Topography of the Duchy of Holstein. (Topographie des Herzogtums Holstein.) By H. Oldekop. 2 volumes, besides appendices and index. 4to. Kiel, 1908. Lipsius and Tischer.

The general arrangement of these two volumes is similar to that followed in the Topography of the Duchy of Schleswig (see above) to which they form a sequel. The introductory chapters occupy seventy-five pages; the remainder of the first volume and the whole of the second volume consists of appendices in which all the districts of the Duchy of Holstein are dealt with in detail, as well as those of Lauenburg, Lübeck and Hamburg.

The Army Annual. Edited by Major F. S. Baden-Powell. 447 pp. 4to. London, 1909. The Army Press. 7/6.

The contents of this year's edition differ from those of previous years in so far as information contained in the latter, which has become out of date, has, to a great extent, been omitted.

Information with regard to the health of the Army and the Indian Military Supply Department has been added, and an account of the progress of the Territorial Force and aerial navigation is given. Lists of "Public inquiries into Army matters since 1800" and "Interesting questions and answers in Parliament" are also for the first time included in this volume, which maintains the same general features as the last edition.

Spanish and English Commercial and Technical Terms. By R. D. Monteverde. 120 pp. 8vo. London, 1908. Whittaker. 2/-.

This book contains a series of useful phrases, principally of a commercial character; there is, however, practically nothing dealing with motor cars, or technical mechanical terms.

CAVALRY.

The Rôle of Cavalry in Reconnaissance and Security Duties. (Rôle de la Cavalerie dans le Service d'Exploration, de Sureté, et de Couverture.) By Captain Janet. 36 pp., with 6 maps. 8vo. Paris, 1909. Chapelot. 1/2.

This short pamphlet endeavours to prove that, as a general rule, too much is expected of the cavalry as far as concerns obtaining information, and affording a commander a clear insight into the actual position of affairs in the theatre of war. The writer claims that the old theory of superiority in mounted troops ensuring the receipt of full and accurate intelligence is exploded, and that under modern conditions it is impossible for the cavalry, however great its superiority in numbers and handling, to obtain information on which a commander can place implicit reliance. He asserts that, though secret agents and kindred methods of collecting intelligence can be utilised with advantage, no true reconnaissance can be carried out unless a force of all arms is employed. In support of his contention he quotes specific instances from the war of 1870 tending to show that the mounted troops, sometimes under the most advantageous conditions, failed completely to "clear up the situation," owing to the lack of the support of the other arms.

Cavalry at the "Manœuvres du Centre." (La Cavalerie aux Manœuvres du Centre). By Colonel Aubier. 32 pp. 8vo. Paris, 1908. Berger-Levrault. -/10.

This short work is less a description of the action of the cavalry at the "Manœuvres du Centre" than a general treatise on the employment of mounted troops considered under the three headings of strategy, tactics, and the pursuit.

The writer gives a subsidiary title to his work, namely, "Manœuvre fiction and war realities," and he points out how fallacious are the deductions of those critics who would minimise the value of cavalry in consequence of the small measure of success with which that arm usually meets in mimic warfare. This apparent lack of success he attributes to the fact that the demoralising influences of the battlefield, such as fatigue and casualties, to which troops would in nearly every instance have been subjected previous to the cavalry onslaught, have not been taken into due consideration. He draws largely on the Russo-Japanese War to illustrate the use and misuse of cavalry in its strategic rôle.

What a Dutch Huzsar Ought to Know on Field Service. (Wat een Hollandsch Huzaar te Velde Weten Moet.) By Lieutenant van Hoytema. 80 pp. 12mo. The Hague, 1909. Electrische Drukkerij.

This is a little handbook for the use of the rank and file of the Dutch cavalry; its object, as stated in the preface, is to give a concise summary of the points with which a cavalry soldier should be familiar on service. The book commences with a short summary of the forces in the Netherlands, and the customs of war, then follows information on map reading, duties on the march and hints on reconnaissance and orderly work. The latter part of the book deals with the service of security, advanced guards, outposts, method of challenging and method of occupying billets; the book concludes with some notes on health and first aid to the injured.

FORTIFICATION AND MILITARY ENGINEERING.

Improvised Bridges. (Ponts Improvisés.) By G. Espitallier and F. Durand. 284 pp., with 99 illustrations. 8vo. Paris, 1909. Doin. 4/-.

This volume is intended essentially as a guide to practical work in the field, and, as such, forms a most complete and concise book of reference. Military bridges are classed under the usual categories of floating, pier, and suspension, and various types of each are considered in minute detail, and their method of construction clearly shown by means of excellent illustrations. Calculations are given for estimating the carrying capacity of each type, and, though complicated details are avoided, the data are sufficiently concise for all practical purposes.

Special reference is made to the system invented by Lieutenant Tarron, which was tested in 1904 when a flood carried away the bridges in the village of Bozel. On this occasion a semi-permanent bridge on his system, with a span of 25 yards, was constructed in 72 hours. It is claimed that bridges of this type, without intermediary supports, can be used for a span of 50 yards, and though their camber appears somewhat excessive, their utility is undoubted in the case of mountain gorges when it is impossible to employ either floating or pier bridges, and when material for a suspension bridge is not forthcoming. A short chapter is devoted to light foot and other quickly constructed bridges, which are especially suitable in the case of advanced guards and other detached bodies of troops whose transport must be reduced to the lowest possible scale.

Our own manuals contain practically the same information regarding flying bridges as is given in the present volume, but there is much which will be new to the non-specialist officer in the paragraphs dealing with cordage and other make-shift suspension bridges.

Perhaps the most interesting chapter is that which deals with the bridging equipment of the French Army and that of the armies of other Powers; it concludes with a table giving the number of pontoons or boats taken into the field, the method of transport, length of bridge which can be constructed, &c., in the case of each of the various armies. The last chapter touches on the question of the preservation, destruction and restoration of the different bridges commonly constructed in the field.

Permanent Fortification. (Die Beständige Befestigung.) By Ritter von Brunner (Major, Austro-Hungarian Engineer Staff). 149 pp., 1 plan, with numerous plates and figures. 4to. Vienna, 1909. Seidel. 5/-.

The author of this well-known work, now in its seventh edition, states that he has arranged his subject in an altogether different manner to that adopted in the previous editions; for example, he has endeavoured to separate the technical details from the tactical and strategical portion of the subject. In addition, there is a great deal of new material, notably the plan of a modern girdle of forts, and what perhaps is of more particular interest to the British Army, a more detailed handling of coast defence and local or "blocking" works ("Sperrwerke") in hilly country.

The chapters are five in number:—

I.—Introduction.

II.—Use of permanent fortifications (with examples from Central Europe).

III.—Land defences—
- A. The "girdle" fortress.
- B. "Blocking" works.
- C. Special forms of land defences.

IV.—Coast defences—
- A. Remarks on warships.
- B. Effect of naval and fortress guns against ships.
- C. General arrangement of coast defences.
- D. Details concerning coast defences.

V.—Improvised or supplementary works.

HISTORICAL.

Reminiscences of Lieutenant-General Friedrich Karl v. Schmidt. Part II. (Erinnerungen aus dem Leben des General Leutnants Friedrich Karl v. Schmidt. II. Teil.) 150 pp., with 1 sketch map. 8vo. Berlin, 1909. Mittler. 3/2.

This volume is in continuation of Part I. of General von Schmidt's reminiscences, which was published by the Historical Department of the German General Staff in 1908. It covers the period from the mobilization of 1805 till April, 1813. Early in 1806, owing to complications which had arisen with England, the Ivernois Battalion, to which von Schmidt belonged, was ordered to form a line of posts along the East Frisian coast line. The British did indeed land on the island of Nordeney, but as they paid for everything they took, and as both sides knew that the state of war was more formal than real, their presence did not incommode the Prussian outposts. The Ivernois Battalion was not present at Jena. On hearing the news of this defeat it marched north-east, crossing the Elbe at Boitzenberg and finally joining Blücher's column in time for the disastrous action at Lübeck. Von Schmidt avoided capture by escaping in plain clothes into Danish territory. After the peace of Tilsit and the subsequent reductions of establishment he was fortunate enough to be retained in the army, thanks to Blücher's special intervention.

The last chapter begins with the news of the destruction of Napoleon's Grande Armée and the King of Prussia's famous "call to arms" to his people. The memoirs carry us, however, no further than the commencement of hostilities, and terminate abruptly in the middle of an account of an affair of outposts at Finkenwalde where the Kolberg Regiment, to which von Schmidt now belonged, was engaged.

The National War of 1812. (La Guerre Nationale de 1812.) Published by the Russian General Staff. Translated by Captain E. Cazalas, Historical Section of the French General Staff. Vol. III., 443 pp. Vol. IV., 481 pp. Vol. V., 448 pp.; each volume has an index. 8vo. Paris. Lavauzelle. 8/4 per volume.

The historical value of these volumes is very great, since they contain the whole of the enormous correspondence of the Russian War Minister, General Barclay de Tolly, from May to October, 1811.

In Volume III. and Volume V. an interesting light is thrown on the intelligence and secret service systems of the Russian Army. In Volume IV. all other matter is dwarfed by the historic despatch of General Barclay de Tolly to the Czar, which was the genesis of the strategy that destroyed the "Grande Armée." The Russian War Minister, after examining the causes that had contributed to the success of the French, lays bare the weak points in their organization and administrative methods. He points out that Napoleon's new method of war must in its turn be met by a still newer method, that of taking famine as an ally, avoiding all decisive

battles and operating incessantly against the flanks and rear of the enemy. In no country could these methods be applied more successfully than Russia, with her wide spaces and her rigorous climate, while the hordes of irregular horsemen at the disposal of the Czar formed an admirable instrument for putting them into execution. The lines of advance open to Napoleon are then reviewed, with suggestions as to how each invasion should be met.

The want of a map forms a serious handicap to the reader.

History of the Campaign at the Beginning of 1813 and Preceding Events. (Geschichte das Frühjahrfeldzuges 1813 und seine Vorgeschichte.) Vol. 2. Events from the end of April to the Armistice. Series "History of the Wars of Independence, 1813-15." By Lieutenant-General von Caemmerer. 322 pp., with 16 appendices, notes and 5 maps. 8vo. Berlin, 1909. Mittler. 10/10.

This volume deals with the crossing of the River Saale by Napoleon, the operations leading up to the Battle of Bautzen, the retreat of the allies into Silesia and other events up to the declaration of the armistice.

The author criticizes Prince Eugene for his want of initiative in delaying to capture Merseburg until after the fall of Halle, but the error appears to lie primarily with Napoleon's Chief of the Staff owing to the restrictive nature of his orders.

Scharnhorst takes exception to Wittgenstein's "instructions" issued on 27th April, 1813, considering them as both "ceremonious and verbose." He submits that, given active cavalry, the position at Wurzen would have been quite a safe one, and that the line of retreat of the allies on Dresden was not liable to interruption. Clausewitz considers that offensive tactics would have been best for the allies on this occasion and that defensive tactics with the Elbe in their rear were unwise.

The author of the present volume questions Scharnhorst's criticisms, and is of opinion that a vigorous offensive by the allies in the direction of Lützen might have yielded great results without undue risk. Toll favoured a concentration near Altenburg in order to prevent Napoleon's advance on Leipsig; this is the plan which was finally adopted by Wittgenstein.

As a result of the imperfect reconnaissances of Wintzingerode and Ney on 2nd May, 1813, they failed to discover their proximity to each other. This fact and his failure to understand his orders caused Ney to miss the opportunity of dealing the enemy a severe blow.

Gneisenau considers that the allies were right in fighting at Grossgorschen, but that their plans were faulty.

The decision of the allies to retire into Silesia along the Austrian frontier was based on both strategical and political considerations. The objection to this plan was that Berlin was left open to attack, and that the lines of communication of the Russians became unduly long. As they were expecting reinforcements this was a matter of some importance. It appears, however, that, on the whole, the allies acted wisely.

Wittgenstein is criticized for not attacking the French when the latter were crossing the elbe, since the conditions were most favourable at that time.

Napoleon considered that the allied armies would separate after a defeat, and he based his strategy at the Battle of Lützen on this assumption. Want of cavalry prevented him from discovering his mistake in time.

The author contends that Wittgenstein should have fought at Bischofswerda or at Gödau instead of at Bautzen. Had he done so on 14th or 15th May he could have delivered a successful counterstroke, since he held the passages of the Elbe and was superior in numbers to the enemy.

Ney's failure to carry out the flank attack rendered Bautzen an indecisive victory for Napoleon. The author considers, nevertheless, that had the centre of the allied army been attacked at about 3 p.m. victory might have rested with Napoleon.

The engagement at Reichenbach again exemplified the inferiority of the French cavalry in this campaign, and the surprise attack at Hainau put an end, in the author's opinion, to the French pursuit. He therefore disputes Barclay de Tolly's criticism on this action.

The author contends that if Wittgenstein had made an attack in force on Macdonald at Gross Rosen and if Blücher had also attacked Marmont, success in the former case would have been certain, and in the latter probable. Napoleon would then have had to abandon his advance and concentrate his forces at Liegnitz. Wittgenstein's faulty tactics in not supporting Bülow, and Blücher's failure to use his opportunity resulted, instead, in the retirement of the allies on Schweidnitz. The author considers that Napoleon would have done better to have forced the allies away from the Austrian frontier before agreeing to an armistice, but his lack of cavalry and the hostile attitude of the Austrians appear to have influenced his decision.

Bülow's strategy at Hoyerswerda is severely criticized by Lieutenant-General von Caemmerer, who holds that a victory might have had considerable effect on the state of affairs at that time.

The French Conquest of Algeria. By Major G. B. Laurie. 210 pp., with maps. 8vo. London, 1909. Rees. 6/-.

This book contains a brief and simple narrative of the chief events in the fighting that went on, more or less continuously, between the years 1830 and 1857, and is the only history of this conquest published in the English language.

The author has not attempted a critical discussion on French policy or military strategy, but casts some doubts as to the true motives which induced France

to undertake the subjugation of this warlike race. He, however, comes to the conclusion that "the debt that Europe owes to France for the conquest of this country has seldom been recognized. The results have been good for all, and all who care for the advancement of civilisation must acknowledge her noble effort for the good of the many peoples of Algeria."

Major Laurie has consulted many authorities to obtain his facts, but has followed M. Rousset where differences of statement exist.

The book is pleasantly and ably written and is interesting. There are three maps which give a good general idea of the country and show the position of all places mentioned in the narrative.

The Question of Fortresses in the Defence of States. (Grundlagen und Aufgaben der Reichsbefestigung). By Colonel J. Schön of the Austro-Hungarian Infantry. 112 pp., and 3 maps. 8vo. Vienna, 1909. Seidel. 2/9.

This book is a reprint of articles which appeared in the third and fourth parts of "Mitteilungen über Gegenstände des Artillerie-und-Geniewesens" of the current year. The title is somewhat of a misnomer, as the discussion is mainly confined to the influence exercised by the fortresses in the two campaigns of 1796-7 and 1866; the first twenty pages, however, contain remarks of more general application.

Whilst enumerating cases in which the possession of fortresses has exercised a harmful effect upon the general operations of a campaign, the author by no means adheres to the views expressed in the work "Influence of Fortresses in Military Operations" (by P. Rath), reviewed in the April number of this publication; on the contrary, he shows that the possession by the Austrians of the various fortresses in the two campaigns specified, contained much that was or might have been advantageous.

The 17th Army Corps at Loigny. (Le 17e Corps à Loigny). By Commandant de Sonis. 493 pp., with 9 sketches and maps. 8vo. Paris, 1909. Berger-Levrault. 5/-.

The Battle of Loigny, which was fought on 2nd December, 1870, is a battle of which the details are but little known and often misrepresented. It has, however, been the subject of much controversy. On the German side the general outline of the battle has been filled in without much difficulty, but on the side of the French the absence of supreme command, the separate action of the two army corps, and the failure of successive and detached efforts, make it difficult to get a clear grasp of events. The book which has been written by the son of the former commander of the 17th Corps, in order to refute unjust criticisms of his father's action in this battle, contains a precise and clear account of the events of the 2nd December.

Our Troops in Bosnia and Herzegovina, 1878. Vol. 6. (Unsere Truppen in Bosnien und der Herzegowina, 1878), Tuzla and Doboj. By Lieutenant Edmund von Horstenau. 86 pp., with some sketches and illustrations in the text. 8vo. Vienna, 1909. Stern. 2/-.

This small publication deals with the operations of the Austrian troops, under the Hungarian General Count Szepary, against the Bosnian insurgents from July, 1878, until the conclusion of hostilities in October of the same year.

Russo-Japanese War Monographs. Vol. XV. (Einzelschriften über den Russisch-Japanischen Kreig. 15 Heft). A supplement to O.M.Z. 30 pp., with 4 maps, 2 panoramic sketches, 2 photographs, and 1 "order of battle" (Japanese 12th Division). 8vo. Vienna, 1909. Seidel. 2/-.

This monograph deals with the operations of the Japanese 12th Division against a Russian detachment under General Herschelmann, which culminated in the action of Chiao-Tou or Siho-yen (called Sihejan in this work). It embraces the period 14th to 20th July, 1904. An appendix gives some textual reproductions of Japanese instructions and orders.

The volume begins with a description of the opposing forces and the theatre of operations, next follows a detailed account of the events under consideration, a concluding section being devoted to criticisms. Attention is called to the great anxiety which the Japanese displayed for the safety of their flanks.

The action of the second battalions of the Japanese 24th and 46th Regiments is likewise commented upon. The commander of a battalion of the latter regiment, noticing that the enemy in front of him was withdrawing, initiated an action which cost the Japanese many casualties and which was not in accordance with the plans of the divisional and brigade commanders. The enterprise of the Japanese battalion commander is, however, favourably judged. The disadvantages accruing to the Russians as a result of their line of retreat being almost in prolongation of their right flank is pointed out. Finally a eulogy is passed upon the energy and spontaneous co-operation of the Japanese regimental and battalion commanders, which stands out in glaring contrast to the Russian attitude, and is characterised as one of the principal factors contributing to the Japanese victories.

The maps show the general situation on 17th July and the different phases of the action of Chiao-Tou (Sihejan). The sketches show the view from and looking towards the Russian position. The photographs show the ground over which the Japanese attackers had to pass.

German Official Account of the Russo-Japanese War. Liao-yang. Authorised translation by Karl von Donat. 221 pp., with ten appendices and ten maps. 8vo. London, 1909. Hugh Rees. 10/6.

This volume is a continuation of the series of which parts have appeared from time to time, the last instalment, "Wa-fan-gou," having brought the history of the war down to the eve of the battle of Liao-yang, after the junction of the Japanese 2nd, 4th, and 1st Armies. The present portion, after a brief *résumé* of the situation, takes up the story on the morning of the 29th August, 1904.

The work suffers from the defects of the previous instalments, in that the names of places are transliterated after the German system. It is often very difficult to find villages on the maps, and since there is a large amount of detail in the account, it is at times fatiguing to a British reader. But the progress of the fight can be traced from the admirably clear way in which the forces are shown on the maps, and the last two chapters, describing the Russian retreat and commenting on the conduct of the battle, are models of lucidity.

Attention is drawn throughout to the nervousness which General Kuropatkin exhibited as to his line of retreat, and General Umezawa's small detached force, operating in the mountains miles to the eastward, is shown as exercising an undoubted effect upon the battle, owing to the exaggerated reports to which its presence gave rise. The alternative courses open to the rival commanders are discussed in the last chapter. General Kuroki's action in passing half his army (the 1st) to the right bank of the Tai-tsu Ho early in the action is adversely criticized, but is condoned since it arose from an erroneous belief that the Russians had commenced their retreat. On the other hand, his vigorous action when he discovered his error is most favourable contrasted with that of his opponent. The situation is summed up in the words: "The will to conquer, conquered."

The appendices contain details as to the strength of the opponents and their disposition at various dates.

Politics and War in Morocco. (Politica ed armi ad Marocco). By Captain G. Marietti. 188 pp., with 4 maps. 8vo. Turin, 1909. Casanova. 3/-.

This book is divided into three parts. In the first of these an interesting account is given of the existing condition of affairs in Morocco itself and of the "Morocco Question" as far as it affects the European Powers. Part II. contains an account of the fighting in 1906, 1907, 1908. Part III. is principally concerned with the events connected with Mulai Hafid's accession to power.

Rasplata (The Reckoning). By Vladimir Semenoff. Translated by L. A. B. 480 pp. 8vo. London, 1909. John Murray. 10/6.

This work has appeared as a serial in the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. It is from the pen of the author of "The Battle of Tsushima," of which a translation was published in 1906, and is really a diary of his experience from the outbreak of war until the arrival of the Baltic Fleet in the Straits of Tsushima.

He was in Russia in January, 1904, and was ordered to join a ship in Port Arthur, where he arrived shortly after the outbreak of hostilities. In various capacities he served afloat until the sortie made by the Russian Squadron on the 10th August, 1904, at which time he was commander in the cruiser *Diana*, which escaped to Saigon and was there disarmed. Returning to Russia he joined the battleship *Suvoroff* as a supernumerary, and with the Baltic Fleet made the voyage to Tsushima, where he was wounded and taken prisoner.

Although the narrative is of absorbing interest, the information will be of more value to naval than to military readers.

General Wolfe. By E. Salmon. 242 pp., with index. 8vo. London, 1909. Pitman. 3/6.

This admirable study of the life and achievements of General Wolfe is one of the series of "Makers of National History."

In the first half of the book, Mr. Salmon briefly draws a clear and sympathetic portrait of the subject of the memoir. He gives an excellent idea of his character and of the manner in which he came to the front notwithstanding lack of private means and of influential connections.

The second half of the book contains a detailed account of the Quebec expedition up to the death of General Wolfe, at the very moment when success was assured. The plan of the St. Lawrence River and defences of Quebec render the description of the operations easy to follow.

Mr. Salmon makes use of the latest ascertained facts about the expedition, and shows that the success which attended it was due to General Wolfe's personality and plan for the final assault, and not to the action of his subordinates.

Field-Marshal Sir Neville Chamberlain, G.C.B. By G. W. Forrest. 504 pp., with index. 8vo. London, 1909. Blackwood. 18/-.

The record of this distinguished soldier's services in India is so closely bound up with the history of the country itself that, to appreciate the former thoroughly, it is essential to have a clear outline of the latter, and this the writer of Sir Neville Chamberlain's biography has given us in his admirable description of the stirring events with which this period of British rule in India was replete.

The subject of this biography landed, as a cadet of eighteen years of age, at Madras in 1837 and did not sever his connection with India until 1881, after five years in command of the Madras Army.

During this period he was actively employed in nearly every campaign which took place in that Empire, and it can be said, without exaggeration, that he distinguished himself in every one of these, both by his personal dash and bravery and by the soundness of his judgment, as shown by the numerous letters now published.

Although a stern disciplinarian he was full of human sympathy, and, notwithstanding the difficult positions in which he was frequently placed, he managed to gain the goodwill and hearty co-operation of all with whom he came in contact, by sheer strength of character and force of example.

The chapters dealing with the Indian Mutiny are among the most interesting in the book, and it is only by means of these private family letters that we are enabled to appreciate to the full the part which this daring and modest officer bore in the siege of Delhi, even when incapacitated through a severe wound from leading the troops in person.

To the sportsman the description of Chamberlain's expeditions in South Africa in search of lion will especially appeal, and the account of the hairbreadth escapes he had show clearly that his utter disregard for personal danger was not confined to the field of battle.

Mr. Forrest, in his concluding paragraph, says of Sir Neville Chamberlain: "His own letters and diaries through the long series of his years show how great personal valour was combined with a true spirit of kindliness, and humanity and skill in war were intertwined with a love of culture and a serious interest in great questions." The best word said of him was by another Warden of the Marches: "Chamberlain was the soul of chivalry." This opinion will be endorsed by all who read this interesting narrative.

The Life of Major-General Sir Charles William Wilson. By Colonel Sir Charles Watson. 397 pp., with maps and illustrations. 8vo. London, 1909. Murray. 15/-.

The varied career of this distinguished officer is well described by Sir Charles Watson, who has had access to Sir Charles Wilson's private letters, diaries and note books, from which a considerable number of extracts are given.

The earlier part of his service, of over forty-two years, was mainly spent in survey and boundary commission work in Canada, Servia and Palestine. The account of this work, though interesting, is overshadowed by the record of his connection with Egypt which lasted from 1882 until shortly after the return of the Nile expedition of 1885.

His letters and reports of this period will be read with great interest and show the clear insight he possessed of the general situation in Egypt and the Soudan, and at the same time dispose of the theory that he was in any way to blame for the failure of the expedition to reach Khartum in sufficient time to save General Gordon.

The maps are good and an excellent index facilitates reference.

The Life of Joachim Murat (1767-1815). Volume II. (Joachim Murat 1767-1815). By Prince Murat. 500 pp., with portrait. 8vo. Paris, 1909. Plon Nourrit. 6/-.

This volume consists entirely of Murat's correspondence during the years 1801, 1802, and 1803, during which period he was engaged in the pacification of Italy and in the establishment of the Italian Republic. An interesting light is thrown on Murat's administrative abilities and on the relationship existing between the Marshals in Napoleon's army.

Memoirs of General Griois (1792-1822). Vol. I. (Mémoires du Général Griois). Written by himself. 430 pp., with portrait. 8vo. Paris, 1909. Plon Nourrit. 6/6.

General Griois passed the greater part of his service in Napoleon's Horse Artillery and gives a very entertaining picture of regimental life at that period. Volume I., which brings his narrative down to 1812, contains no description of any of Napoleon's celebrated battles; but there is a good deal of military interest in his account of the Artillery School at Chalons, where Marmont, Foy and Duroc were Griois' contemporaries and in his description of the raw levies which formed the Republican armies, which Napoleon was to transform into the "Grande Armée."

Memoirs of the Chevalier de Grueber (Souvenirs du Chevalier de Grueber). Published by his nephew and translated into French by Captain de Maleissye-Melun of the French General Staff. 302 pp. 8vo. Paris, 1909. Perrin, 2/10.

A readable record of events between the years 1801 and 1817. The Chevalier, as an Austrian and Bavarian cavalry officer, participated in numberless actions of the many campaigns of the period named.

Twenty-five Years' Soldiering in South Africa. **By a Colonial Officer. 447 pp., with portrait and map. 8vo. London, 1909. Melrose. 14/-.**

This is a readable and interesting account of service spent for the most part in that well-known Cape Colonial Corps, the Cape Mounted Rifles. The author, the son of an officer of the British Army, originally desired to join the Imperial Army, but on the death of his father found it necessary to abandon this idea and decided to make his career with the military forces of one of the colonies. The news of the Zulu War and the Battle of Isandhlwana turned his thoughts to South Africa, and, proceeding there in 1879, he joined the Cape Mounted Rifles in September. His first year found him on active service in Basutoland, where the Cape Colonial Force was commanded by Colonel Bayley. The force was engaged in operations against Morosi who had established himself in his mountain stronghold which was assaulted and captured in November, 1879, the chief and five of his sons being killed. A few months of tranquility followed, but in July, 1880, the Gun War broke out in Basutoland, and the Cape Mounted Rifles entered the disaffected area in September. They had a trying time near Mafeking until reinforcements under Brigadier-General Mansfield Clarke arrived. For some months desultory fighting took place in Basutoland. Eventually an armistice was declared, and, after the proclamation of peace, Basutoland was handed over to the Imperial Government. The author was soon afterwards given a commission.

He then saw service in Pondoland, after which he was sent in command of a detachment of the Cape Mounted Rifles to Bechuanaland and Rhodesia.

From 1894 to 1896 his service was of a varied character and comprised duty in Pondoland, Griqualand West and Bechuanaland. During the South African War the author served with several irregular corps, and was for some time adjutant of Steinacker's Horse.

The chief interest of the book lies in the early chapters, which deal with the fighting in Basutoland, and in which "Colonial Officer" gives a graphic account of the difficult nature of the country.

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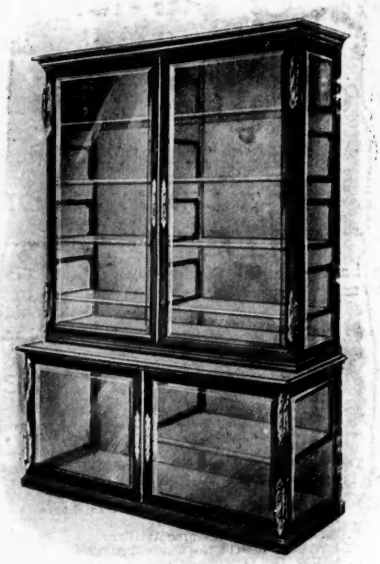
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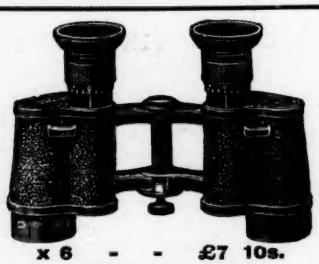
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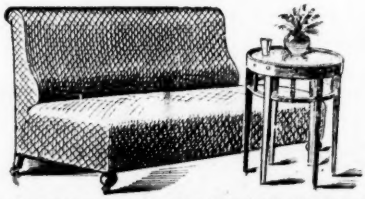
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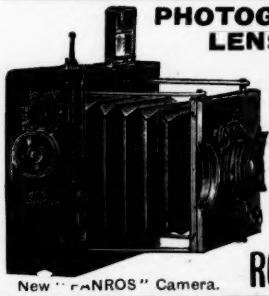
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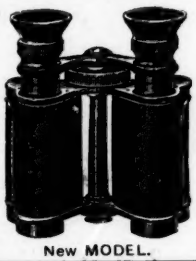
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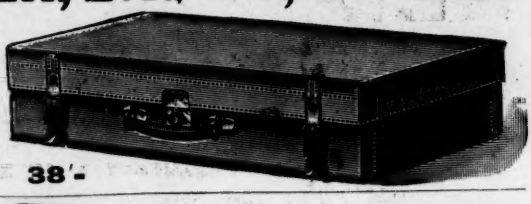
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